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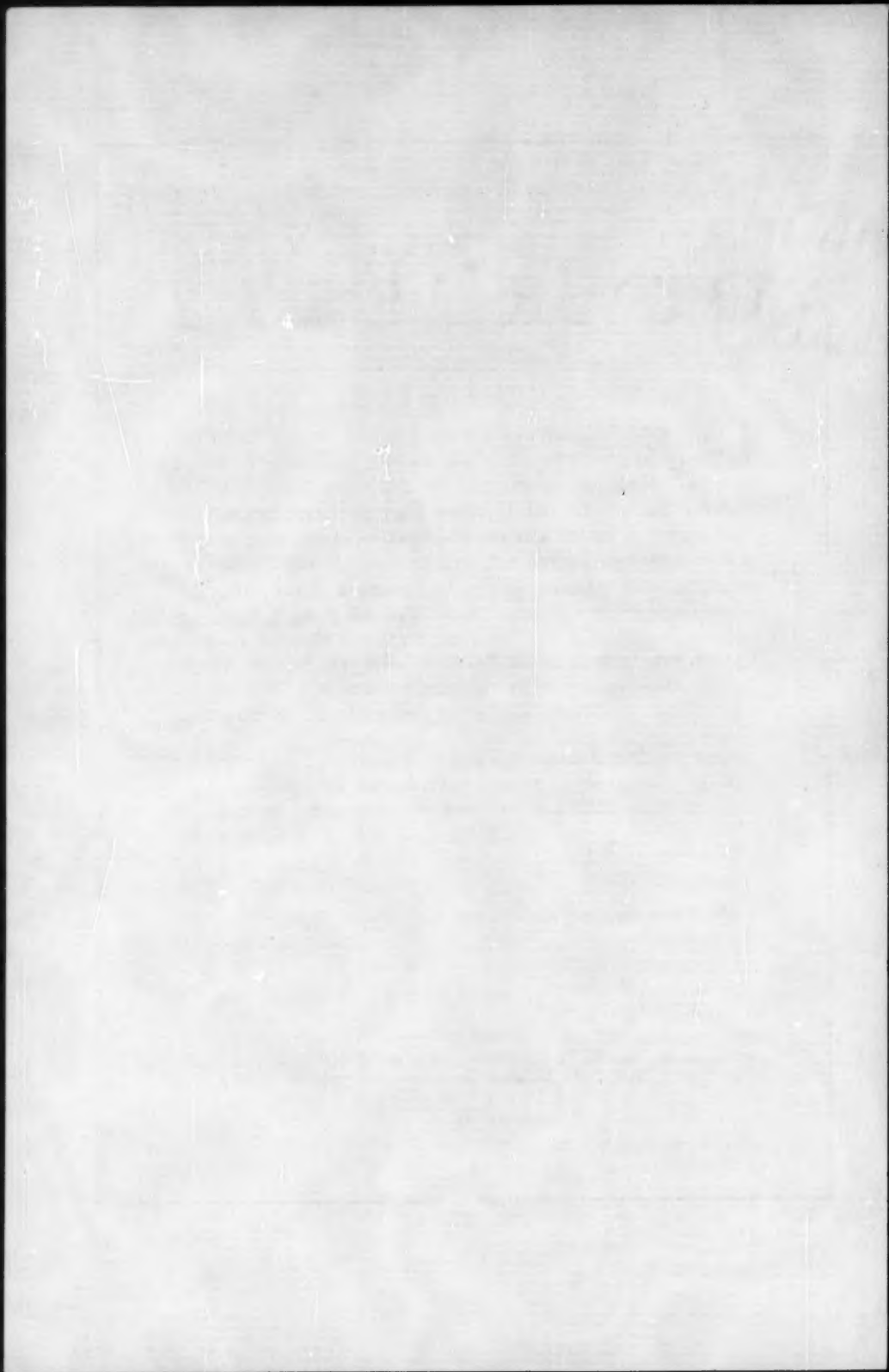
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IN THIS ISSUE

THE paper, "Matched Cohort Studies, Evaluation of Time Study Methods in Family Sociology, Summary, and Conclusions," completes a report by Dr. Matthew Taback on "Family Structure and Its Changing Pattern," which started in the October, 1954, issue. The entire paper is the sixth in a series of studies being conducted by the Department of Biostatistics of the School of Hygiene and Public Health of the Johns Hopkins University under the general heading, "Family Studies in the Eastern Health District," dealing with the findings of censuses made in that section of Baltimore in 1922, 1933, 1936, 1939, and 1947.

In this section of the paper, Dr. Taback discusses changes in family size, occupational status of the head, and composition of the household over the period of the censuses, using the matched cohort technique.

• • •

The series of articles bearing the general title Social and Psychological Factors Affecting Fertility is continued in this issue with two reports.

The article "The Prediction of Planned Fertility" by Charles F. Westoff and Edgar F. Borgatta is the second of two articles reporting on the results of a scale and factor analysis of data from the Indianapolis Study. The first article, published in the last issue of the *Quarterly* (October 1954) treated the prediction of *total* fertility as opposed to *planned* fertility which is the subject of the present paper. Both articles represent an attempt to organize the broad range of data in the Indianapolis Study without regard to previously designated hypothesis areas

and to test the sensitivity of the data to some of the more recently developed statistical techniques.

In the article "Attitudes toward Restriction of Personal Freedom in Relation to Fertility Planning and Fertility," Ruth Riemer and P. K. Whelpton analyze the data that were collected in the Indianapolis Study to test the hypothesis "The stronger the feeling that children interfere with personal freedom, the higher the proportion of couples practicing contraception effectively and the smaller the planned family." Largely because of the *ex post facto* nature of the data, the authors found it impossible to differentiate between cause and effect relationships. Their substitute hypotheses are simply concerned with the interrelations of "feeling of restriction," unsuccessful fertility control, number of children, and low socioeconomic status.

FAMILY STUDIES IN THE EASTERN HEALTH DISTRICT: VI. FAMILY STRUCTURE AND ITS CHANGING PATTERN^{1,2}

PART II. MATCHED COHORT STUDIES, EVALUATION OF TIME STUDY METHODS IN FAMILY SOCIOLOGY, SUMMARY, AND CONCLUSIONS

MATTHEW TABACK, Sc.D.³

MATCHED COHORT STUDIES OF FAMILY STRUCTURE

COMPARISON of distributions obtained in successive censuses in the Eastern Health District afford an opportunity to obtain cross-sectional and cohort estimates of time trends in several household attributes for generations born during the period 1860-1911.

In this section, changes in family attributes are determined by the matched cohort technique. These estimates will then be compared with the cross-sectional and cohort findings and the differences analyzed. The variables investigated by the matched cohort method will be family size, occupational status of the head, and composition of the household. In addition to describing the mean trend of a cohort of families in respect to these characteristics the experience of individual units will also be given.

FOLLOW-UP METHOD AND EXPERIENCE

The mechanics of following specific family aggregates in large population groups, depend upon a definition of the family unit itself, the exposition of a set of rules which determine in all but a few cases whether a family is considered present from one census to another and a coding scheme which permits the employment of electronic machines to collate information for a given unit over a defined interval of time.

The definition of the household as used in this investigation

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² Part I of this report was published in the October, 1954, issue of the *Quarterly*.

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Table 21. Follow-up experience with families in the Eastern Health District, by periodic censuses.

CENSUS YEAR	1922 COHORT ^a				1933 COHORT ^a			
	Years Following Initial Enumeration	Total	White	Colored	Years Following Initial Enumeration	Total	White	Colored
NUMBER ENUMERATED								
1922	—	7,256	6,069	1,187	—	—	—	—
1933	11	2,969	2,603	363	—	10,734	8,229	2,510
1936	13.5	2,551	2,257	294	2.5	7,427	5,916	1,511
1939	17	2,312	2,071	241	6	5,511	4,335	1,176
1947	25	1,407	1,255	152	14	3,782	3,013	769
PER CENT ENUMERATED								
1922	—	100	100	100	—	—	—	—
1933	11	41	43	31	—	100	100	100
1936	13.5	35	37	25	2.5	69	72	60
1939	17	32	34	20	6	48	53	47
1947	25	19	21	13	14	35	37	31

^a Families originally enumerated in 1922.^b Families originally enumerated in 1933.

has been previously provided. A family was considered present from one census to another if the head of the household was enumerated at both censuses or if his spouse in the earlier census was recorded as the household head in the later census. The identification of an individual from one census to another was made in general on the basis of consistency in the following characteristics; name, color, sex, and age.

In order to assemble all of the available information on a given family, data from matched "head of household" cards were reproduced into a summary card.

The households followed up consist of families originally enumerated in 1922, whom we shall call the 1922 cohort, and households originally enumerated in 1933 (1933 cohort). The maximum possible period of observation for the 1922 cohort is twenty-five years, and the equivalent figure for the 1933 cohort is fourteen years.

A review of the available literature indicates that there are few follow-up studies of substantial population groups which have run the length of twenty-five years. The number of families which have been followed in the Eastern Health District is shown in Table 21 for the 1922 and 1933 cohorts.

Utilizing the data available from the 1933 cohort for short term follow-up estimates and the material from the 1922 cohort for long term experience, it is found that the usual type of attrition curve of the negative exponential type $y = e^{-bt}$ does not give a proper fit. The actual experience is one of sharper decline in the early years and a flatter slope in the later years than the negative exponential possesses. Empirically it is found that an extraordinarily good fit is provided by the curve $y = a - b \log(t + 1)$. In Figure 8 is shown the observed experience in the follow-up of white families and the fitted curve $y = 100 - 54.1 \log(t + 1)$. Values determined from this curve have been obtained for each year following the date of initial enumeration and are available upon request. These values may prove of some aid to persons planning to engage in follow-up studies of household aggregates. The curve describing the ex-

Table 22. Follow-up experience with white families by age of household head, 1922 cohort.

AGE OF HEAD 1922	NUMBER PRESENT IN					PER CENT PRESENT				
	1922	1933	1936	1939	1947	1922	1933	1936	1939	1947
TOTAL	6,069	2,603	2,257	2,071	1,255	100	43	37	34	21
Under 25	195	57	52	51	41	100	29	27	26	21
25-29	631	232	215	222	162	100	37	34	35	26
30-34	854	396	356	357	244	100	46	42	42	29
35-39	884	443	409	390	271	100	50	46	44	31
40-44	739	367	338	315	194	100	50	46	43	26
45-49	710	367	315	281	168	100	52	44	40	24
50-54	674	307	260	228	112	100	46	39	34	17
55-59	478	201	153	121	39	100	42	32	25	8
60-64	404	128	97	69	14	100	32	24	17	3
65-69	242	75	43	25	7	100	31	18	10	3
70-74	135	16	11	3	-	100	12	8	2	-
75 and Over	88	7	3	3	-	100	8	3	3	-
Unknown	35	7	5	6	3	100	20	14	17	8

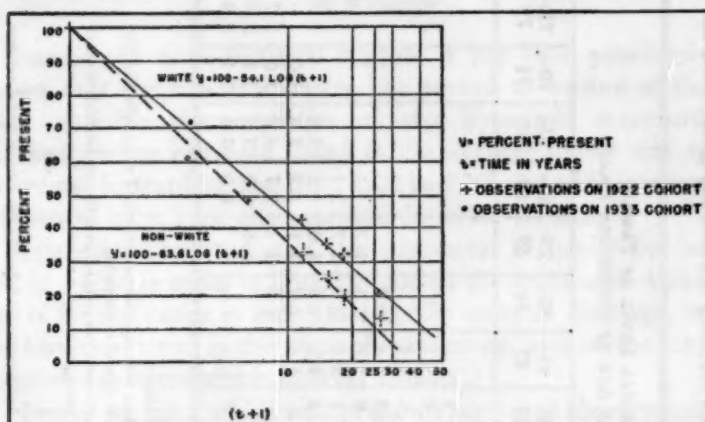


Fig. 8. Follow-up experience with families in the Eastern Health District.

perience of non-white families is also shown in Figure 8 and indicates the greater loss involved with this segment when compared with the white families.

After a quarter-century, 21 per cent of the original white families were still under observation. This experience varies with the age of the household head as is evidenced by the data shown in Table 22. In the analysis of this material, the following findings are of interest:

1. For short term follow-up (eleven years) the percentage remaining at the end of the interval is lower at both extremes of the age scale and reaches a maximum in the age group 40-49.
2. For long term follow-up (twenty-five years), the proportion remaining of an original age cohort does not differ appreciably for groups below fifty years of age and drops markedly for older groups.

These findings for short term follow-up are consistent with Luykx's determinations based upon a three-year follow-up experience. Some of the variables associated with stability exclusive of age have been previously investigated in detail and will be discussed in a later section.

Table 23. Mean size of white households for specified developmental levels according to generation group; based on matched cohort studies in the Eastern Health District.

GENERATION (YEAR OF BIRTH OF HEAD)	SOURCE OF DATA			DEVELOPMENTAL LEVEL OF FAMILY EXPRESSED AS AGE OF HOUSEHOLD HEAD ¹												
	Cohort	Age Group	Number Families	Under 25	25- 29	30- 34	35- 39	40- 44	45- 49	50- 54	55- 59	60- 64	65- 69	70- 74	75- 79	
1911	1933	25	32	2.8	3.5	3.7	3.8									
1906		25-29	195	3.6	4.2	4.3	4.3									
1901		30-34	363		4.1	4.5	4.5	4.5	4.1							
1900	1922	25	34	3.2	4.0	4.9	5.0	4.6	4.2							
1895		25-29	142		3.9	4.5	5.0	4.8	4.4	4.0						
1890		30-34	221			4.3	4.9	4.9	4.6	4.1						
1885		35-39	238				4.8	5.1	4.9	4.3	3.7	3.1				
1880		40-44	174				5.2	4.9	4.5	4.0	3.6	3.2				
1875		45-49	148						5.3	4.7	4.1	3.8	3.4	3.0		
1870		50-54	98							4.9	4.3	3.7	3.3	3.0	2.7	
1865		55-59	34								4.6	4.0	3.4	3.1	2.9	
1850		60-64	12									4.0	3.6	3.1	2.9	

¹ Procedures used in preparation of table

1. Only families present continuously were employed.

2. For 1922 cohort:

1933 data were regarded as an observation 10 years following initial data of enumeration

An arithmetic average of the 1936 and 1939 indices was regarded as an observation 15 years following initial date of enumeration.

The distortions involved in procedures 2 and 3 are made in order to obtain observations at 5 year intervals following the date of initial enumeration. They do not produce serious biases.

3. For 1933 cohort:

1939 data were regarded as occurring 5 years following data of initial date of enumeration

4. Linear movement was assumed over 10 year intervals in which it was necessary to insert values at the five year mark.

SIZE OF FAMILY

Based upon cross-sectional studies, it has been previously shown that the size of a family has proved to be one of the most variable characteristics of the household structure. Marked decline has been found in the average family size as one comes forward in time from 1922 to 1947 and wide interage differences have been characteristic in white families.

Matched cohort studies of this parameter of family life result in a unique series of observations on the manner in which size of family varies in individual family units as they age, on the historical trend in this type of maturation, and on the long range size patterns which families assume.

Most of the data which will be shown represent observations on the cohort of white families of 1922 which has been followed successfully to 1947. Because of the small number of non-white families which were originally available and the less favorable follow-up experience, no separate analysis of this latter group has been attempted.

In Table 23, the mean sizes for various groups of stable families followed continuously during the interval 1922-1947 are shown in successive rows. Thus, the twenty-five year recorded history of families with household heads born in 1860 is given on the final row and younger cohorts are shown in higher rows. To develop as comprehensive a picture as the available data would permit, observations on a group of younger families followed since 1933 have been added.

Analysis of this table gives a clear understanding of a dramatic change which has been developing in the family structure over the past quarter century. At each age level, the family has become smaller with succeeding generations. Maximum size for any specific generation is reached when the household head is from 35-44 years of age. The variation of size of family with generation is accounted for by a similar trend in respect to minor children present in the household. Thus, if the number of such individuals in the household is subtracted from the

	AGE OF HOUSEHOLD HEAD (YEARS)					
	35-39	40-44	45-49	50-54	55-59	60-64
Cross-Sectional Estimates	4.8	5.2	5.3	4.9	4.6	4.0
Matched Cohort Observations	4.8	5.1	4.9	4.3	3.7	3.1

Mean size of family of generation of 1885 according to cross-sectional data and matched cohort observations.

total size, the variation between rows is reduced to an insignificant order.

The discrepancy introduced when cross-sectional data are used to provide information on the nature of events associated with aging is shown in the accompanying table. Taking the families headed by the generation born in 1885 (age 35-39 in 1922) we find that the 1922 observations for each five-year group (cross-sectional data) fail to give an accurate story of the average developmental course which families of a given group would pursue as they aged.

The variation which individual family units show relative to change in size is not apparent from the previous analysis, which was concerned with mean trends. In Figure 9, the change in household size for successive generations is shown for two eleven-year periods, 1922-1933 and 1936-1947. A few words of explanation may be necessary before studying the figure in detail. On the left hand side, we have plotted changes in size over the eleven year period 1922-1933, for cohorts of families arranged according to the age of the household head in 1922. For instance, families with heads aged 50-54 years are further identified as belonging to the generation of 1870. The graph on the left hand side shows that approximately 32 per cent of these families lost two or more members during the interval 1922-1933, 30 per cent lost one member, 20 per cent exhibited no change, etc. For this same group of families, the changes in size experienced during the interval 1936-1947 are shown on the right hand side of the figure opposite to the graph described above.

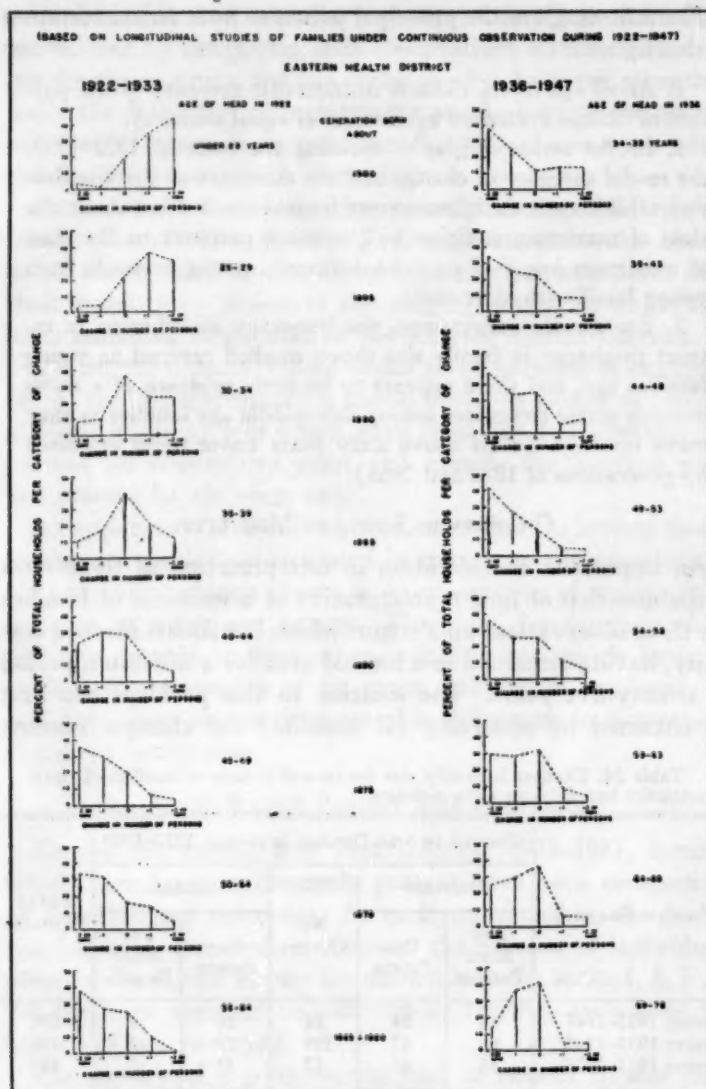


Fig. 9. Changes in family size during specified periods according to year of birth of household head.

The following are the principal points to note on examination of this figure:

1. At all age levels, there is considerable diversity in the pattern of change evidenced by families of equal maturity.

2. In the series of graphs covering the interval 1922-1933, the modal category of change and the character of the distribution exhibit systematic movement from concentration about the class of maximum addition (+2 or more persons) to the class of maximum loss (-2 or more persons), as one proceeds from young families to older units.

3. For specific generations, the frequency distribution in respect to change in family size shows marked reversal as young families age, and there appears to be some evidence of a move towards stable structures among late middle age families as they move into age groups above sixty years (note trend exhibited by generations of 1870 and 1865).

CHANGES IN SIZE AND MOBILITY

An important consideration in interpretation of these data is the question of how representative of a universe of families are these observations on a cohort which has shown marked stability, having remained in a limited area for a minimum period of twenty-five years. The solution to this problem can best be obtained by observing (if possible) the changes ensuing

Table 24. Changes in family size for several groups of families of equal maturity but differing as to mobility.

FAMILY GROUPS ¹	CHANGE IN SIZE DURING INTERVAL 1933-1939					TOTAL FAMILIES
	Decrease		No Change	Increase		
	2 or More Persons	One Person		One Person	2 or More Persons	
Present 1922-1947	48	84	84	16	6	238
Present 1933-1947	68	87	109	19	13	296
Present 1933-1939	36	43	57	12	7	155
TOTAL	152	214	250	47	26	689

¹ All groups have head of households whose age in 1933 was between 45-49 years.

over an interval of time in a group of families which have moved and by comparing such observations with data describing the changes recorded in a stable group. As noted parenthetically the feasibility of maintaining serial observations on mobile family groups is an unknown factor, and one upon which this investigation cannot throw light.

As an alternative design for a study of the association of family change with mobility, we may compare the change noted among families of uniform maturity but who differ as to their mobility by reason of the varying length to which they have remained in the area of the Eastern Health District. In Table 24, the frequency with which given patterns of change in family size are distributed is shown for three groups of families of equal maturity and which have remained (a) continuously present for twenty-five years (b) present for fourteen years (c) present for six years only.

An application of the X^2 test indicates that the several family groups are similarly distributed in respect to the categories of change. The analysis shown is representative of similar comparisons at other age groups. Therefore, for families which differ in respect to long-range stability but which have all evidenced a minimum of six years stability in residence, we find that there are no demonstrable differences in patterns of change in family size.

LONG RANGE FAMILY SIZE PATTERNS

During the twenty-five year interval 1922-1947, families which have been continuously present have been enumerated on five different occasions. At each enumeration, the family size has been described in terms of the number of individuals present. Thus, one among the numerals in the series 1, 2, 3 . . . 9.0 has been assigned to followed-up families each time the household was surveyed.

The history of a given family unit in respect to size may, therefore, be summarized by employment of a five digit number. For example, the family of John Smith followed for

twenty-five years may have the pattern 5, 7, 5, 4, 3. This would indicate that this family consisted of five members in 1922 and on successive enumerations was found to have 7, 5, 4, and 3 persons respectively. The number of possible patterns is 10^5 or 100,000. Obviously not all of these patterns would occur but there would be too many to permit of any rational analysis.

Suppose then a family is classified in each census into one of three categories as follows:

<i>Number of Family Members</i>	<i>Code</i>	<i>Type</i>
1-2	S	Small
3-4	M	Moderate
5 or more	L	Large

If we have five observations, there would be a possibility of getting 3^5 or 243 classes which remain too many to be used in analytical schema. It is proposed, therefore, that three observations be used, as obtained from the 1922, 1936, and 1947 surveys, and further that a family receive an appropriate coded entry for each observation made. The possible patterns will number 3^3 or 27 in number which may then serve as an initial basis for stratifying followed-up families according to long range size patterns.

In Table 25, a master distribution of white households is given according to the long-range size patterns evidenced over the interval 1922-1947 and according to the age of the household head at the start of the period. Of the possible 27 classes, frequencies of one or more were noted for 24 types. Of the total of 1,140 families classified, 433, or 38 per cent, had a history of predominantly moderate sized households for a quarter century, 409, or 36 per cent, of the families were large throughout the period, 183 were predominantly small and 115 ran a variable course. The long range pattern varies with the age of the household head at the start of the observation period.

In order to study further the characteristics of the size complex, the manner in which various ethnical groups distribute themselves in respect to this variate has been investigated. In

FAMILY SIZE PATTERN	AGE OF HOUSEHOLD HEAD (1922)							
	Total	Under 25	25-29	30-34	35-44	45-54	55-64	65 and Over
TOTAL	1,140	37	146	229	423	252	47	6
Predominantly Small	183	3	5	25	63	65	20	2
SSS	55	—	3	12	18	16	6	—
SSM	12	—	1	1	6	2	1	1
SMS	16	3	—	4	4	3	1	1
MSS	77	—	1	7	30	31	8	—
LSS	23	—	—	1	5	13	4	—
Predominantly Moderate	433	19	76	100	135	86	15	2
Sized	16	1	7	4	4	—	—	—
SMM	14	1	—	1	8	4	—	—
MSM	115	3	19	21	45	23	3	1
MMS	114	4	20	31	36	20	3	—
MMM	40	3	10	17	7	3	—	—
MML	65	7	18	17	15	6	2	—
MLM	69	—	2	9	20	30	7	1
LMM	409	12	56	89	117	66	8	1
Predominantly Large	51	7	20	17	5	2	—	—
MLL	2	—	—	—	2	—	—	—
LSL	10	—	1	3	4	1	—	1
LML	59	1	4	8	36	10	—	—
LLS	159	1	14	28	81	30	5	—
LLM	120	—	15	31	48	23	3	—
LLL	115	3	9	15	48	35	4	1
Variable	6	1	1	3	—	1	—	—
SML	4	—	—	2	2	—	—	—
MSL	3	2	—	—	1	—	—	—
SLM	15	—	5	4	5	1	—	—
MLS	7	—	1	—	3	3	—	—
LSM	80	—	2	6	37	30	4	1
LMS								

Table 25. Long range white family size patterns according to age of head of household, Eastern Health District 1922-1947.

1936, in conjunction with statistical studies on personality disorders in the Eastern Health District, several definable segments of the population were classified in respect to national background. Specifically, these groups were Hebrew, Czech, Pole, and Italian. Since the families included in our study of long-range size patterns were coded in this process, the distribution shown in Table 26 became possible. The Czech and Italian segments appear to have a higher proportion of household units in the "large family" category than is found among the remainder of white family units. An examination of the age dis-

FAMILY SIZE PATTERN	TOTAL	CZECH	HEBREW	ITALIAN	OTHER WHITE
	NUMBER				
TOTAL	1,140	250	31	40	819
Predominantly Small	183	23	2	4	154
Moderate Sized	433	81	9	8	335
Predominantly Large	409	114	11	25	259
Variable	115	32	9	3	71
	PER CENT				
	100	100	100	100	100
Predominantly Small	16	9	7	10	19
Moderate Sized	38	32	29	20	41
Predominantly Large	36	46	35	63	31
Variable	10	13	29	7	9

Table 26. Distribution of white households according to long range family size patterns and ethnic groups.

tributions of the several ethnical groups fails to provide evidence that they differ as to age composition. Thus the difference in size distributions between ethnical groups is not associated with differences in age distributions.

The data available permit an examination of the possible association of size patterns with the occupational class of the family unit. Shown in Table 27 is a distribution of size patterns for each of seven occupational classes and a remaining unknown group. Comparing the percentage distributions for each class one is impressed with the similarity of these ratios. Whatever differences exist between occupational class ratios and comparable figures for the total population are accountable as sampling variation. It is probable, therefore, that there exists very little association between occupational class and that characteristic of family life described by the long range size pattern.

COMPOSITION OF THE FAMILY

The changing character of the family in terms of its head structure, the presence of children, and the presence of rela-

Table 27. Distribution of white households according to long range family size pattern and occupational group.¹

FAMILY SIZE PATTERN	NUMBER								
	TOTAL	PROFESSIONAL	PROPRIETOR	CLERK	SKILLED WORKER	SEMI- SKILLED WORKER	OTHER LABORER	SERVANT CLASS	UNKNOWN
TOTAL	1,140	24	122	143	533	207	49	51	11
Predominantly Small	183	8	19	20	82	35	9	9	1
Moderate Sized	433	7	44	59	203	75	16	25	4
Predominantly Large	409	6	50	44	189	84	20	12	4
Variable	115	3	9	20	59	13	4	5	2
PER CENT									
TOTAL	100	100	100	100	100	100	100	100	100
Predominantly Small	16	33	16	14	15	17	18	17	9
Moderate Sized	38	29	36	41	38	36	33	49	36
Predominantly Large	36	25	41	31	35	41	41	24	36
Variable	10	13	7	14	11	6	8	10	19

¹ Occupational classification is based upon the occupation of the head of household recorded in the 1922 census.

tives or lodgers can be precisely documented by longitudinal studies of family aggregates.

Confining attention to the stable group of white families which have been present continuously for twenty-five years, one obtains a general picture of the changing composition of families from inspection of Table 28. For the 1,109 white units followed, the relative frequency in each of six family classes is shown for the successive enumerations. As the families age with time, the principal type of structure, the married couple-child complex, is replaced with increasing numbers of female headed units and with modest increases in male headed households.

The frequency of the married couple-child grouping will be examined at each age level for successive generations. The relevant data are shown in Table 29 which is similar in form

Table 28. Household type of white families (cohort of 1922) followed for a period of 25 years Eastern Health District.

HOUSEHOLD	1922	1933	1936	1939	1947
	NUMBER				
TOTAL ¹	1,109	1,109	1,109	1,109	1,109
MFC	914	803	754	671	424
MF	141	154	169	203	300
WC	27	98	110	136	177
W	11	25	36	43	105
MC	10	21	27	42	76
M	6	8	13	14	27
	PER CENT				
TOTAL	100	100	100	100	100
MFC	82	72	68	61	38
MF	13	14	15	18	27
WC	2	9	10	12	15
W	1	2	3	4	10
MC	1	2	3	4	7
M	1	1	1	1	3

- ¹ MFC — Married couple with children.
 MF — Married couple without children.
 WC — Female head with children.
 W — Female head without children.
 MC — Male head, wife absent, with children.
 M — Male head, wife absent, without children.

Table 29. Per cent of total families in the married couple-child category by age of head according to generation group.¹

GENERATION (YEAR OF BIRTH OF HEAD)	SOURCE OF DATA			AGE OF HOUSEHOLD HEAD											
	Cohort	Age Group	Number of Families	Under 25	25- 29	30- 34	35- 39	40- 44	45- 49	50- 54	55- 59	60- 64	65- 69	70- 74	75- 79
1911	1933	25	32	53	88	85	81								
1906		25-29	195		77	89	91	84							
1901		30-34	363			85	86	81	76						
1900	1922	25	34	74	85	97	91	80	68						
1895		25-29	142		85	87	89	85	72	60					
1890		30-34	221			84	85	82	78	65	52				
1885		35-39	238				86	79	75	70	53	36			
1880		40-44	175					83	78	72	57	44	31		
1875		45-49	148						83	70	57	51	40	28	
1870		50-54	98							78	63	48	35	25	
1865		55-59	34								70	53	32	32	24
1860		60-64	12									58	42	17	8

¹ See Table 23 for outline of procedures employed in preparation of generation tables.

and has been prepared in the same manner as Table 23 dealing with generation trends in family size.

When variation between generations is considered, no systematic trend is found except in the age levels between 50 and 64 years of age. For example, in the column in which the age of the household heads is 35-39, one notes that the percentage of households with a married couple-child group remains approximately constant for the several generations for which data are given. A similar result holds for all columns for which the age of the household head is below 50 years. When the age of the head is between 50 and 64, the relative frequency of the married couple-child family type declines in more recent generations. The decline averages approximately twenty per cent over twenty-five years.

It is of interest to inquire into the factors associated with the between-generation drop in percentage of the married couple-child family type. Table 30 gives the experience of white families in the Eastern Health District in respect to the relative frequency of the married couple in followed-up units at various age levels. It may be noted that there are no differentials of significance to be found between generations. The trend among the followed-up families in respect to the presence of one or more children is shown in Table 31. In contrast to the previous table, there are significant differences between generations in the percentage of families with children at age levels 50-64 years. It is believed that this trend is a consequence of a decline in the number of children present at earlier age levels, a development which manifests itself by a reduced frequency of families with children present in later middle adult ages.

In view of the failure to find significant intergeneration variation in respect to the relative frequency of married couples at given age levels, the experience of the several generations has been pooled. As a result a distribution of stable households according to category of head structure is shown in Table 32 for successive five year age levels. The data are graphically presented in Figure 10. The married couple family type remains the

Table 31. Per cent of total families with one or more children present by age of head according to generation group.

GENERATION (YEAR OF BIRTH OF HEAD)	Number OF Families	AGE OF HEAD (YEARS)											
		Under 25	25- 29	30- 34	35- 39	40- 44	45- 49	50- 54	55- 59	60- 64	65- 69	70- 74	75- 79
1911	32	53	88	88	88								
1906	195		78	91	91	89	83						
1901	363			87	89	86	79						
1900	34	74	85	97	94	88							
1895	142		85	89	93	93	81	69					
1890	221			85	87	90	86	77	68	58			
1885	238				87	87	86	81	69	63	56		
1880	175					85	83	79	70	70	62	55	
1875	148						88	80	72	71	64	58	52
1870	98							90	81	74	68	65	
1865	34								82	75	75	68	58
1860	12												

Table 32. Percentage distribution of families by class of head structure and age of household head.

HEAD STRUCTURE OF FAMILY	AGE OF HOUSEHOLD HEAD											
	Under 25	25-30	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100
Married Couple	100	97.5	97.1	95.7	92.8	90.6	86.4	79.7	70.9	61.4	51.7	36.1
Female, No Husband	—	1.4	1.6	4.8	5.4	6.9	9.7	14.2	21.2	29.4	39.2	46.9
Male, No Wife	—	1.1	1.3	.5	1.8	2.5	3.9	6.1	7.9	9.2	9.1	17.0

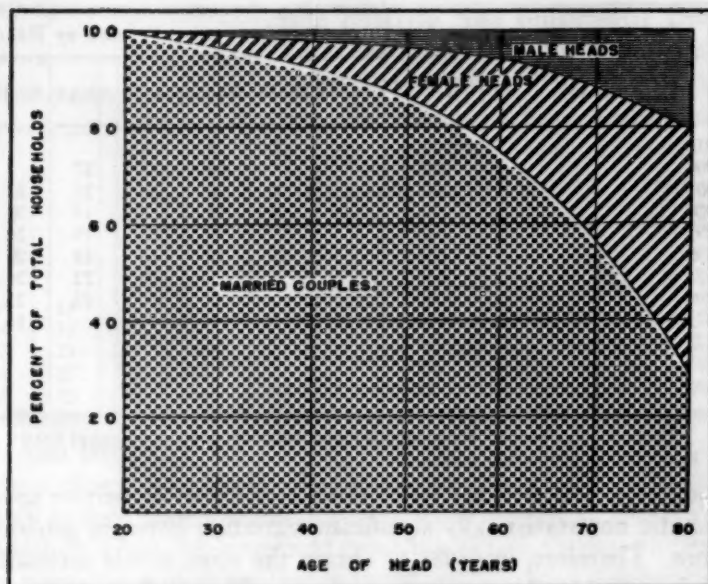


Fig. 10. Relative frequency of households according to head structure and age of head of household, white families, Eastern Health District.

dominant category of household to about 50 years of age. From this point on, as the joint lifetime of the marital partners declines rapidly, the married couple family type is replaced in increasing measure by the female headed family, and to some extent there is a concomitant rise in the percentage of male headed families (no wife being present).

STATUS OF RELATIVES IN THE HOUSEHOLD

Earlier cross-sectional studies gave indication that there had been little change in the frequency with which relatives occur in white household units enumerated in the Eastern Health District during the period 1922-1947. Further information on this constant feature of family life is provided by a longitudinal study of family units.

Table 33 presents a series of ratios describing for various generations the frequency of families with relatives present in the

GENERATION (YEAR OF BIRTH OF HEAD)	TOTAL FAMILIES	AGE OF HEAD (YEARS)						
		Under 25	25-29	30-34	35-39	40-44	45-49	50-54
1911	32	6	3	3	6			
1906	195		17	14	15	17		
1901	363			16	19	21	23	
1900	34	6	9	12	3	18	30	
1895	142		17	20	23	19	26	31
1890	221			19	16	14	20	28
1885	238				19	22	24	24
1880	174					25	25	24
1875	148						14	21
1870	98							28
1865	34							
1860	12							

Table 33. Per cent of white families with relatives present by age of head according to generation group.

household. At each age level, there appears to be neither systematic nor statistically significant variation between generations. Therefore, in order to obtain the most stable estimate of the trend in this attribute as the family ages the experience of the several generations has been combined and is shown in Table 34.

With increasing age, the proportion of households which in-

Table 34. Per cent of white families with relatives present by age of head (consolidated experience of stable cohorts.)

AGE OF HEAD (YEARS)	TOTAL FAMILIES	FAMILIES WITH RELATIVES PRESENT	
		Number	Per Cent
Under 25	66	4	6.1
25-29	403	61	15.1
30-34	987	161	16.3
35-39	1,225	216	17.6
40-44	1,367	268	19.6
45-49	1,320	296	22.4
50-54	1,021	261	25.6
55-59	913	260	28.5
60-64	704	207	29.4
65-69	466	144	30.9
70-74	292	83	28.4
75-79	144	41	28.4

55-59	60-64	65-69	70-74	75-79
35				
26	27			
25	28	32		
28	34	32	30	
30	32	29	27	26
21	26	29	24	32
	17	25	33	41

clude relatives rises consistently from 15 per cent when the household head is aged 25-29 years to 30 per cent at the time the household head reaches 65 years of age. The types of relatives present can be conveniently classified into four broad categories and are shown in Table 35.

The presence in the household, of parents of the household head, rises to a maximum frequency of 8 per cent during the period that the head is aged 30-39 years of age. A gradual decline

in this frequency takes place, dropping to 1 per cent at 65 years of age. The family of a married child of the head (which may include her spouse and/or children) appears in significant numbers when the household head reaches 45 years, and rises to a maximum of 16 per cent in families whose head has reached 65 years of age. With the exception of the extreme ages, there is a relatively constant proportion of families amounting to 8 per cent which include relatives other than parents, married children, or grandchildren. The presence of grandchildren only, in the household, is at a relatively low order below the age of 50 years. However, in the older age levels, the relative frequency reaches 5-6 per cent of all such households.

THE OCCUPATIONAL CLASS OF THE HOUSEHOLD

The concept of progressing steadily until the pinnacle is reached in the society of men is an ideal of life in democracy and is, of course, possible for any family unit. In a dynamic description of family life, one is concerned with assessing the frequency with which social mobility takes place as well as its direction.

If one proceeds to measure change, a suitable indicator of movement must be utilized. In the characterization of the social status of families, the highest educational level attained

by the household head may be employed as one possible index. It is apparent, however, that a family classified according to this index can show no change in social status with the flow of time. Family income would be a measure of social-economic status capable of change, but it is difficult to obtain and diffi-

Table 35. Distribution of white families with relatives according to type of relative present and age of head.¹

AGE OF HEAD	TOTAL FAMILIES	FAMILIES WITH RELATIVES	TYPE OF RELATIONSHIP ²			
			Parent (s) of Head	Family of Married Child	Grand-child Only	Other ³
NUMBER OF FAMILIES						
Under 25	66	4	—	—	—	4
25-29	403	61	27	—	—	34
30-34	987	161	80	—	—	81
35-39	1,225	216	98	5	4	109
40-44	1,367	268	91	45	15	117
45-49	1,320	296	77	91	18	110
50-54	1,021	261	44	112	24	81
55-59	913	260	28	132	35	65
60-64	704	207	12	99	40	56
65-69	466	144	2	76	28	38
70-74	292	83	1	37	15	30
75-79	144	41	—	17	8	16
PER CENT OF FAMILIES						
Under 25	100	6.1	—	—	—	6.1
25-29	100	15.1	6.7	—	—	8.4
30-34	100	16.3	8.1	—	—	8.2
35-39	100	17.6	8.0	0.4	0.4	8.8
40-44	100	19.6	6.7	3.3	1.1	8.5
45-49	100	22.4	5.8	6.9	1.4	8.3
50-54	100	25.6	4.3	11.0	2.4	7.9
55-59	100	28.5	3.1	14.5	3.8	7.1
60-64	100	29.4	1.7	14.0	5.7	8.0
65-69	100	30.9	0.4	16.3	6.0	8.2
70-74	100	28.4	0.2	12.7	5.2	10.3
75-79	100	28.4	—	11.8	5.5	11.1

¹ Consolidated experience of stable cohorts.

² In a small number of cases (approximately 1 per cent), where relatives were present, there were two types. Only one was included in this classification, priority being given to parent and family of married child categories.

³ Includes siblings of the head or of his spouse, nieces and nephews, aunts and uncles, and cousins.

cult to interpret when collected over a long interval of time.

The occupational class of the household head, therefore, is considered as the best index by which the migration of an individual family from one social level to another can be approximated in these data.

Our occupational classification being of a qualitative character and involving seven classes, it has been found expedient to work with ten-year cohorts rather than with five-year groups in a longitudinal study of families relative to their occupational status. In Table 36 will be found a summary of observations made on three cohorts of families who were in the age groups 25-34, 35-44 and 45-54 at the initial census in 1922. For three classifications, "professional workers," "clerks and kindred workers," and "other laborers" there is no significant change noted with aging for a given generation. Several changes are worthy of note. In each generation, there is a parallel trend of decline from 1922 to 1936 in the percentage of families in the skilled worker class and a subsequent rise over the period 1936-1947. If each generation were studied separately, it might be concluded that these were real age effects. However, the trends occur in similar form in generations which differ quite markedly in age. Furthermore, we cannot find significant "between generation" differences in the percentage of skilled workers at a given census. These two results suggest that the trends observed with age for a specified generation are not essentially age effects, since they occur in identical form at different age levels. One explanation for the uniform decline in all generations may be that the trend was associated with the depression and affected all segments of the population without respect to age.

A more direct approach to the question of mobility in the occupational status of the family aggregate is obtained by a study of individual family performance in respect to this attribute. In Table 37, the twenty-five year history of families followed throughout the period 1922-1947 is classified into an eight category classification of long range occupational pat-

Table 36. Percentage distribution of families by occupational class according to age of head and generation group.

YEAR OF BIRTH OF HEAD	YEAR OF CENSUS	AGE IN CENSUS YEAR	NUMBER FAMILIES	OCCUPATIONAL CLASS OF HOUSEHOLD							
				Total	Professional Persons	Proprietors Managers Officials	Clerks Kindred Workers	Skilled Workers	Semi- Skilled Workers	Other Laborers	Servant Class
1892	1922	30	363	100	2.3	10.1	13.9	48.3	19.9	4.9	0.6
	1933	41	363	100	1.9	16.7	11.1	40.3	21.4	6.9	1.7
	1936	44	363	100	3.1	15.6	12.4	36.3	25.7	5.0	1.9
	1939	47	363	100	1.9	15.0	11.6	38.8	23.5	7.5	1.7
	1947	55	363	100	1.9	10.0	12.8	43.3	24.2	7.2	0.6
1882	1922	40	412	100	2.5	11.9	12.4	51.2	17.4	3.8	0.8
	1933	51	412	100	2.7	15.6	13.7	41.6	19.1	5.4	1.9
	1936	54	412	100	2.9	15.0	13.7	35.7	25.6	4.4	2.7
	1939	57	412	100	2.9	13.4	13.2	37.7	24.1	5.7	3.0
	1947	65	412	100	2.9	8.7	15.5	40.9	25.4	2.0	4.6
1872	1922	50	246	100	1.3	11.5	10.6	49.8	21.3	3.8	1.7
	1933	61	246	100	1.7	14.7	11.8	41.1	21.8	5.5	3.4
	1936	64	246	100	2.6	14.1	13.7	39.2	21.8	4.3	4.3
	1939	67	246	100	2.6	10.2	13.1	36.3	26.3	6.4	5.1
	1947	75	246	100	2.6	10.5	13.2	42.4	24.1	2.7	4.5

Table 37. Long range patterns in respect to occupational class (based on longitudinal studies of white families in the Eastern Health District 1922-1947).

OCCUPATIONAL CLASS PATTERN	AGE OF HOUSEHOLD HEAD IN 1922 (YEARS)												
	Number						Per Cent						
	Total	Under 25	25-34	35-44	45-54	55-64 and Over	Total	Under 25	25-34	35-44	45-54	55-64	65 and Over
Total Families	1,109	34	363	413	246	46	7	100	100	100	100	100	100
I. No Significant Change	772	17	261	295	160	33	6	70	50	72	65	72	86
1. Same Class Throughout	399	9	151	156	65	12	6	36	26	42	26	26	86
2. Same Class in Two Observations with a Minor Change in the Third	315	8	100	121	71	15	—	29	24	28	29	33	—
3. Same Class in Two Observations with No Occupation or Unknown in the Third	58	—	10	18	24	6	—	5	—	2	4	10	13
II. Significant Change in Class	337	17	102	118	86	13	1	30	50	28	29	35	28
4. Steady Rise	16	—	7	6	3	—	—	1	—	2	2	1	—
5. Steady Decline	7	—	2	3	2	—	—	1	—	1	1	1	—
6. Variable Status	91	2	33	22	30	4	—	8	6	9	5	12	9
7. Same Class in Two Observations with a Major Change in the Third	208	15	60	82	43	7	1	19	44	16	20	18	15
8. No Occupation on Two Observations and a Classification on the Third	15	—	—	5	8	2	—	1	—	—	1	3	4

terms. The method employed was similar to that used in the preparation of the long range size patterns. Each family was given a three digit number designating its occupational rank in 1922, 1936, and 1947. Depending upon the combination obtained, the family was assigned to an appropriate classification as follows:

<i>Occupational Pattern Number</i>	<i>Type of Pattern</i>	<i>Type Combination Included</i>
1	Same Class Throughout	222; 333; 555
2	Same Class in Two Observations with a Minor Change in the Third	223; 322; 232 443; 434; 344
3	Same Class in Two Observations with No Occupation or Unknown in Third	22-; -22; 2-2
4	Steady Rise in Class	357; 345; 234; 123
5	Steady Decline in Class	753; 543; 432; 321
6	Same Class in Two Observations with a Major Change in Third	224; 336; 363; 242
7	Variable Status	243; 132; 634; 425
8	No Occupation in Two Observations with a Classification in the Third	4-; 5-; -3; --3

Seventy per cent of the families studied did not show a significant change in their occupational status over a period of 25 years. (Categories 1, 2, and 3 which are defined above were grouped to form a class of patterns which is essentially stable.) This estimate, aside from sampling variation is constant for all age groups, among families whose heads were aged 25 years or over at the start of the observation period. The frequency of families whose occupational class showed constant change, represented by the pattern designated "variable status" averages 8 per cent for all families.

It may be argued that this characteristic of stability is peculiar to families which evidence little residential mobility, and it is not unreasonable to suppose that more mobile families may have a radically different distribution of patterns than those shown. The design of the Eastern Health District studies did not include provision for the follow-up of mobile family units.

However, as indicated in our studies of family size, it is possible to study the patterns of change over a given interval as a function of the subsequent history of the mobility of the family. We have repeated this type of analysis for occupational status, the results of which are shown in Table 38.

Dividing the families whose heads were 25-34 years of age in 1933 into groups distinguished by their variable length of permanency of residence in the Eastern Health District, their behavior over the interval 1933-1936 is shown. For all families approximately seventy per cent evidence no change in occupational status. The remaining thirty per cent are equally distributed in the direction of the recorded change in occupational status. This general trend appears to satisfactorily describe each of the family groups in spite of the fact that these groups differ markedly in their history of permanency.

Table 38. Changes in occupational class of household head for several groups of families of equal maturity but differing as to mobility.

FAMILY GROUP ¹	TYPE CHANGE DURING INTERVAL 1933-1936					
	Movement Downward of		No Change	Movement Upward of		Total
	2 or More Classes	1 Class		1 Class	2 or More Classes	
	NUMBER					
TOTAL	85	94	790	73	88	1,130
Present 1933-1947	40	39	389	42	43	553
Present 1933-1939	31	30	224	16	19	320
Present 1933-1936	14	25	177	15	26	257
PER CENT						
TOTAL	7.5	8.3	69.9	6.5	7.8	100
Present 1933-1947	7.2	7.1	70.3	7.6	7.8	100
Present 1933-1939	9.7	9.4	70.0	5.0	5.9	100
Present 1933-1936	5.4	9.7	69.0	5.8	10.1	100

¹ All groups have heads of households whose age in 1933 was between 25-34 years.

GENERATION (YEAR OF BIRTH OF HEAD)	NUMBER OF FAMILIES	AGE OF HOUSEHOLD HEAD (YEARS)					
		Under 25	25- 29	30- 34	35- 39	40- 44	45- 49
1911	32	1.3	1.2	1.3	1.4		
1906	195		1.1	1.2	1.4	1.7	
1901	363			1.1	1.2	1.6	1.9
1900	34	1.1	1.1	1.1	1.2	1.5	1.9
1895	142		1.2	1.1	1.1	1.5	1.8
1890	221			1.2	1.2	1.3	1.8
1885	238				1.3	1.5	1.7
1880	175					1.8	1.8
1875	148						2.3
1870							
1865							
1860							

Table 39. Mean number of wage earners in white households by age of head according to generation group.

WAGE EARNERS IN THE HOUSEHOLD

In a description of the social-economic position of the family, the information derived from a study of the occupational class of the head can be supplemented by a study of the number of

Table 40. Mean densities (persons per room) of white households by age of head according to generation group.

GENERATION (YEAR OF BIRTH OF HEAD)	NUMBER OF FAMILIES	AGE OF HOUSEHOLD HEAD					
		Under 25	25- 29	30- 34	35- 39	40- 44	45- 49
1911	32	.64	.73	.76	.77		
1906	195		.74	.82	.84	.84	
1901	363			.81	.86	.86	.81
1900	34	.69	.80	.92	.93	.88	.82
1895	142		.78	.85	.93	.90	.85
1890	221			.84	.92	.91	.88
1885	238				.90	.94	.92
1880	174					.95	.91
1875	148						.97
1870	98						
1865	34						
1860	12						

50-54	55-59	60-64	65-69	70-74	75-79
2.1					
2.0	1.9				
2.0	1.8	1.6			
1.7	1.8	1.7	1.5		
2.0	1.7	1.8	1.6	1.2	
2.4	1.9	1.5	1.5	1.3	1.0
	2.1	1.8	1.4	1.4	1.0
		2.2	1.7	1.3	1.3

wage earners* in the household at various censuses. In Table 39 the average number of wage earners per family unit is shown for the several generations according to the age of the household head. Variation with age for a given generation follows a systematic pattern of increase from approximately 1.15 workers per family at age 25-29 to 2.0 workers at age 50-54 with a gradual decline from this point. Evidence of consistent between generation differ-

ences in the middle adult ages is not apparent although changes would be expected from the decline in the family size previously demonstrated. A probable hypothesis is that the proportion of family members employed has increased and compensated for a decline in the number of members present.

NOTE ON DENSITY OF THE HOUSEHOLD

In view of the close and consistent relationship which density has shown in respect to size of household, the manner in which density varies in a family unit as it ages has been reconstructed

50-54	55-59	60-64	65-69	70-74	75-79
.80					
.81	.76				
.84	.76	.68			
.86	.80	.74	.69		
.89	.81	.77	.72	.66	
.92	.84	.76	.70	.66	.62
	.88	.80	.72	.68	.65
		.80	.74	.68	.65

by obtaining density equivalents for the mean size values shown in Table 23 by use of the regression $Y = .264 + .133 X$ where Y = density and X = size of household. The resulting time trend chart is shown in Table 40.

As the family grows in size, the density or crowdedness factor in the household increases. At its beginning and in the very late ages, the family circle enjoys the maximum space per

* Defined in this investigation as all persons employed in a gainful occupation at the time of the census.

individual. In the interval during which the age of the household head is 35-44 years of age, the family reaches its maximum density in respect to the living space available.

DISCUSSION

This study was undertaken with the primary objective of describing several aspects of the dynamics of family life. Such an investigation is principally concerned with changes which take place in family structure rather than with its status at a particular point in time.

The material employed has been the data secured in successive enumerations of the population of households in the Eastern Health District. The records of these censuses have permitted us to study family change at three levels. At the level of the community, it has been possible to describe the changing characteristics of a population of families in a defined area. For given classes of families grouped according to the year of birth of the household head, matched family records provided information on the changing characteristics of a cohort of families as they age. In addition, data have been available to investigate the historical trends which are operating in the pattern of aging exhibited by successive cohorts. At the level of the individual family unit, variations in the developmental patterns have been described.

INTERPRETATION OF TIME DIFFERENCES

In the conduct of successive enumerations over a long period, there is danger that differences developing with the course of time may be spurious effects associated with changes in interviewing procedures and character of the field staff. When employing several groups of interviewers involved in a simultaneous operation, the technique of interpenetration may be employed to evaluate interviewer differences. However when a time element separates two groups of interviewers, it is difficult to obtain an accurate determination of differences which may be attributed to the field workers themselves. The extent of

this variation was minimized in the Eastern Health District surveys by:

- a. Comparative stability in supervisory personnel.
- b. Employment of field workers of equivalent education.
- c. Standard training programs.

The control of variation associated with coding and classification matters was assured by the employment of uniform instructions and schedules throughout all censuses.

Statistical data in the field of family sociology are relatively recent in origin. Definitions have changed somewhat from one survey to another, and the detail provided has not remained constant. As a result, comparative studies utilizing the cohort technique are difficult to make, and matched cohort investigations, with few exceptions, have not been done. Estimates of age trends in respect to family attributes have thus been made as a matter of convenience from cross-sectional data. The findings of this investigation make possible a comparison of estimates of family changes with age as determined by the three basic time study methods.

In comparing the estimates of time change in family attributes, we are unable to specify which of the indicated trends is the true one. Each of the methods is capable of producing an accurate statement of change if the appropriate conditions, which have been previously cited, are satisfied. Furthermore, although a given method may furnish extremely inaccurate information on one variable, it may nevertheless serve as a good estimating procedure for another.

It will be recalled that our objective in studying mean developmental patterns was to describe, for an original group of families, the manner in which several of their attributes change with time. Since time and age are exactly correlated for individual units, the time change could be directly translated into age change.

The ideal situation would, therefore, be one in which the original sample of units all remained under observation for the desired period of time. However in working with human

populations, one deals with units which are characterized by extensive mobility.

In the present investigation of family aggregates, marked attrition of the number of units kept under study was found at all age levels. The percentage of families followed for twenty-five years is shown in Table 41 in two ways. The number of matched families have been related to the number of units enumerated at the first survey, and are shown in Column 4. Since this procedure fails to take into consideration the fact that family units are "legitimately" lost due to death of both marital partners in the case of a married couple unit or due to the death of the head alone whenever an individual constitutes the head structure, the number of matched units has also been related to the estimated number of units still alive. Such percentages are shown in Column 5.

The families kept under observation for twenty-five years represent 29 per cent of the total families estimated to be alive at the end of this interval, based upon the concept of joint

Table 41. Per cent of white families followed for twenty-five years Eastern Health District 1922-1947.

AGE OF FAMILY HEAD (1922)	NUMBER PRESENT IN 1922	NUMBER PRESENT IN 1947	FAMILIES ¹ INTACT IN 1947	NUMBER FOLLOWED AS PER CENT OF	
				Number Present in 1922 (4)	Number Intact in 1947 (5)
TOTAL	6,069	1,255	4,287	.21	.29
Under 25	195	41	194	.21	.21
25-34	1,485	406	1,444	.27	.28
35-44	1,623	465	1,463	.29	.32
45-54	1,384	280	903	.20	.31
55-64	882	53	241	.06	.22
65-74	377	7	13	.02	.54
75 and Over	88	—	—	.00	indef.
Unknown ²	35	3	29	.09	.10

¹ Estimated on assumption that families cease existence solely on basis of joint mortality in married couple or death when head is an individual male or female.

² Assumption made that heads of unknown age are 45 years of age (mean age of head in 1922.)

survivorship of a married pair and the survival of an individual head. However families cease to exist under circumstances other than the joint failure to survive of a head and spouse. The death of the head or his spouse may make it impossible for the family to survive; the separation of the head and his spouse legally or by common consent may leave fragments which fail to survive as a family entity as defined in this study. Finally the household may merge with another unit and lose its individual status as separate unit.

We may conclude then that the number of white families under observation at the end of the twenty-five-year period is a minimum of 29 per cent of the total families intact at that time. It must be concluded also that a substantial proportion of families alive at the end of the study interval have not been covered by our observations.

COMPARISON OF TIME STUDY METHODS

In Table 42, age trends are given for several family attributes as estimated by the cross-sectional, cohort, and matched cohort methods.

With respect to family size, three findings are noteworthy:

1. The cohort method provides time-specific estimates which are uniformly lower than the matched cohort estimates.
2. Cohort and matched cohort methods provide trends (time changes) which are similar in character.
3. The cross-sectional estimates provide a mean trend in family size which is grossly distorted in respect to the cohort and matched cohort figures. The difference in time specific estimates between the cross-sectional and cohort methods increases as one proceeds from the initial enumeration.

These observations may be interpreted as follows:

1. The agreement of cohort and matched cohort trends results from the existence of two conditions.
 - a. The trend of change exhibited by the matched fraction is approximately parallel to the trend experienced by the non-matched fraction of the original cohort.
 - b. At the time of enumeration following movement, immi-

grants to the cohort are unbiased in mean size of family relative to the outmigrants.

2. The consistent difference in size between the time-specific estimates given by the cohort method and the matched cohort procedures is due to an essential bias which exists in the stable fraction of the original cohort. Non-mobile families are larger than their companions of the same generation.

3. The cross-sectional estimates are probably inaccurate because they are based on comparisons between different generations, and there has been a consistent and marked decline in the mean family size in successive generations.

The presence of children in the household is an attribute

Table 42. Changes with age in several characteristics of family structure according to three time study methods.

METHOD EMPLOYED	AGE OF HEAD OF HOUSEHOLD (YEARS)						
	25-29	30-34	35-39	40-44	45-49	50-54	55-59
MEAN SIZE OF WHITE HOUSEHOLDS							
Cross-Sectional ¹	3.6	4.2	4.5	4.7	4.7	4.6	4.4
Cohort	3.6	4.0	4.4	4.4	4.0	3.5	3.3
Matched Cohort	3.9	4.5	5.0	4.8	4.4	4.0	3.6
PER CENT OF WHITE HOUSEHOLDS WITH CHILDREN PRESENT							
Cross-Sectional ¹	73	82	81	81	79	78	77
Cohort	73	78	83	82	74	66	57
Matched Cohort	85	89	93	93	81	69	60
PER CENT OF WHITE HOUSEHOLDS WITH MARRIED COUPLE AS HEAD STRUCTURE							
Cross-Sectional ¹	96	94	90	89	85	72	67
Cohort	96	91	86	85	79	72	68
Matched Cohort	98	96	94	91	88	85	80
MEAN OCCUPATIONAL CLASS RANK OF WHITE HOUSEHOLDS							
Cross-Sectional ¹	4.2	4.3	4.3	4.2	4.0	4.1	3.9
Cohort	4.2	4.1	4.0	4.2	4.0	3.9	3.9
Matched Cohort	4.1	4.1	4.1	4.1	4.1	4.2	3.9

¹ Estimates given are intended to describe the experience of families whose heads were 25-29 years of age in the 1922 census. Thus the cross-sectional data are for 1922.

closely associated with mean family size. It is not unexpected, therefore, that the relationships which have been outlined for family size estimates appear to be generally true for this variate.

For the characteristic "per cent of households with married couple as head structure," the estimates given by the matched cohort are consistently higher than those provided by the cohort and cross-sectional methods. The differences become more marked as one moves from the initial point of enumeration to later periods. It is believed that the differences noted, result from the more favorable experience of a non-mobile fraction, the matched cohort, in respect to break-up of the marital partnership, since any change in the head structure of the family is likely to require an adjustment including movement.

The problem of determining an accurate age trend for the attribute under consideration may be further investigated by proposing a reasonable model for the manner in which married couple families move into some other category of head structure with the passage of time. Consider the fraction of the original cohort (l_0) which has a married couple head structure. Let us assume that the principal factor causing a decline in the members of the fraction, without causing death of the units themselves, is the death of one or the other of the members of the marital pair, but not of both.⁵

Then at any point in time x , the proportion of families remaining as married couples will be

$$l_x = l_0[1 - ({}_xq_0 - {}_xq'_0 - 2{}_xq_0{}_xq'_0)]$$

where

l_0 = proportion married at beginning of observation

${}_xq_0$ = proportion of husbands failing to survive to x

${}_xq'_0$ = proportion of wives failing to survive to x

⁵ The probability of divorce or separation should be entertained in an exact treatment of this problem. We feel that the frequency of this event is extremely small in the group under consideration. The cohort was originally observed when the head was in the age range 25-29. A sample drawn from this group indicated that the age at marriage was 24 years, and it is estimated therefore that these families had been married for an average of 3.5 years and were past the peak risk. Furthermore, the divorce and separation rate at the time these families were passing through the age interval considered at greatest risk, was not of the same order as it is at present.

METHOD OF ESTIMATION	AGE OF HEAD OF HOUSEHOLD (YEARS)						
	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Attrition by Mortality (l_x)	96	93	90	85	80	73	65
Cross-Sectional	96	94	90	89	85	72	67
Cohort	96	91	86	85	79	72	68
Matched Cohort	96	96	94	91	88	85	80

Estimates of per cent of households with married couple head structure.

In the accompanying table, the l_x values are based on the 1940 life tables and are given for successive 5 year age intervals. Shown also for comparative purposes are the estimates provided by the several time study methods. Both cross-sectional and cohort methods provide age trends which agree quite well with the estimates developed on the basis of the mortality model described. The matched cohort procedure gives increasingly biased results as one moves from the initial enumeration point to later periods. This finding supports the thesis that non-mobile fractions of family aggregates provide observations which lead to overestimates of the relative frequency of stable patterns in the composition of the head structure of the family.

MEAN OCCUPATIONAL CLASS OF HOUSEHOLDS

Similar estimates are provided by the three study methods for age changes in the mean occupational rank of families. The impression given is that there is essentially little change in this attribute with aging. However it must not necessarily be concluded that agreement among the several estimates indicates that an accurate statement of the age trend has been obtained. If an area attracts families of a given social stratum, none of the methods may be sensitive to change in the mean occupational rank of the original cohort. Thus:

- a. Families remaining in the area (matched cohort) will present a stable pattern relative to occupational rank.
- b. Families which move from one social stratum to another are likely to leave the area. These units will constitute the non-matched fraction of the original cohort.

c. Families replacing the mobile fraction (inmigrants) will be of the same stratum as the outmigrants before they manifested social mobility. The cohort method will, therefore, produce an estimate of change which is negligible and which is in fact not consistent with the course of events in the original cohort.

d. If the above situation maintains itself over a suitable length of time, successive cohorts will not show any change with age and the cross-sectional method will similarly fail to show change.

GENERALIZATIONS ON TIME STUDY METHODS IN FAMILY STUDIES

Based upon a study of the properties of the methods for studying time trends and a review of their performance with respect to several family attributes, the following generalizations may be made:

1. The matched cohort method for determining age trends in characteristics of the family is the most precise of the several procedures available.
2. The matched cohort method provides unbiased estimates of time trends when
 - a. Follow-up includes all (or practically all) of the surviving members of the original cohort or
 - b. Follow-up involves a representative sample of the original cohort and is not constrained in area.
3. The matched cohort method provides biased estimates of time specific values of family characteristics when the followed-up fraction is initially biased with respect to the original cohort.
4. The cohort method is less precise than the matched cohort technique when positive correlation exists between successive observations on matched units.
5. The cohort method estimates are unbiased when
 - a. Follow-up includes all (or practically all) of the surviving members of the original cohort or
 - b. Inmigrant families present time trends equivalent in order and direction with those experienced by outmigrant units.
6. The cohort method is biased when families which are lost

Table 43. Time trends in several parameters of family structure, Eastern Health District 1922-1947.

PARAMETER OF FAMILY STRUCTURE	MEAN VALUES					COMMENTS ON TREND
	1922	1933	1936	1939	1947	
WHITE						
Age of Head (Years)	45	47	47	47	48	Consistent but Not Marked Increase
Size ¹	4.3	4.0	3.9	3.6	3.5	Marked Decline of 19 Per Cent over 25 Years
Density ²	.83		.78	.77	.73	Decline of 12 Per Cent over 25 Years
Occupational Rank ³	4.1	4.0	4.0	4.0	4.0	No Significant Change
Percentage with Children	77	73	72	67	63	Consistent Decline involving All Ages
Percentage with Relatives	24	24	23	21	24	No Significant Change
Percentage with Lodgers	5	4	4	5	5	No Significant Change
Percentage with Married Couple as Head Structure	81	76	77	76	74	Decline of Less Than 10 Per Cent over 25 Years
NONWHITE						
Age of Head	42	40	41	42	44	Gradual but Not Marked Increase
Size	4.6	4.3	4.2	4.0	4.2	Decline of less than 10 Per Cent in 25 Years
Density	.85	*	.85	.93	.99	Marked Increase of 16 Per Cent
Occupational Rank	2.4	2.2	2.3	2.3	2.4	No Significant Change
Percentage with Children	61	61	63	58	57	No Significant Change
Percentage with Relatives	27	30	29	28	32	Consistent Decline
Percentage with Lodgers	24	18	18	17	16	
Percentage with Married Couple as Head Structure	75	70	70	68	69	Decline but Less Than 10 Per Cent over 25 Years

¹ Number of persons in household.² Number of persons per room.³ See Figure 7 for method of ranking.

* Not available.

due to death differ in respect to the remainder of the cohort, with respect to the attribute measured.

7. Bias in the four variables of family structure investigated, occurs less often in the cohort estimates of time trends than in the matched cohort approximations.

8. The cross-sectional estimates of age trends are unbiased when age specific values for family variates remain constant with time.

a. Estimates made by this method may, therefore, be biased when considering size of family, per cent of families with one or more children, and density of household since these variables have been found to show considerable change among successive cohorts.

b. Cross-sectional estimates of change will probably be fairly accurate when working with the occupational level, type of head structure and percentage of families with relatives, since these attributes have been found to remain relatively constant at given age levels.

9. The matched cohort method is the only procedure which is capable of determining developmental patterns for individual units and providing estimates of their relative frequency.

10. When the matched fraction gives evidence of bias with respect to the original cohort, the matched cohort method may fail to provide an accurate determination of the frequency of individual patterns and may not reveal the existence of types which are highly associated with mobility.

SUMMARY

The changing structure of the family has been investigated at three levels. Secular trends in the distribution of families in the Eastern Health District have been demonstrated by a series of cross-sectional studies based upon five special censuses during the period 1922-1947. Time trends noted are summarized in Table 43.

Mean developmental trends exhibited by families as they age have been determined by matched cohort studies of households originally identified in 1922. This phase of our investigation has been confined to white units, since the number of

non-white families proved to be too small. Some of the principal findings are:

1. The general pattern of growth below 35 years, a maximum size during the age interval 35-44 years and a subsequent decline is characteristic of the developmental pattern of successive generations. Although the aging trends are approximately parallel, the size of families has declined in successive generations at all age levels, the order of decline being most marked in the 40-64 year age interval.
2. The decline in size between generations is principally associated with a decline in the number of children present in the family at various age levels.
3. White households vary little in the type of members present over the interval during which the household head is 25-44 years old. From this point on, there is noticeable decline in the percentage of households with children present, a decline in the percentage which have both husband and wife present, and an increase in the percentage with relatives present.
4. No significant between-generation difference is found in respect to family composition except in the matter of a decline in the percentage of families with children present in the age interval 50-64 years of age.
5. The mean occupational rank of white families does not vary as a cohort of families ages. This finding holds constant for successive generations.

Developmental patterns have been presented for individual family units in respect to size and occupational status. Families may be classified into 24 categories with respect to their twenty-five-year history in size development. Families grouped into occupational strata do not differ significantly in long-range family size patterns. When families are classified relative to their national backgrounds, Czech and Italian units appear to have a higher proportion in the predominantly large category than do the remainder of the white units. Approximately 70 per cent of the families evidence no significant change in occupational status over a twenty-five-year interval. Of the remaining 30 per cent, one-half give indication of a rise in the

occupational scale, and the other one-half suffer a decline.

Three methodological questions have been clarified. In a consideration of the choice of family unit, the household has been found to represent the most appropriate aggregate for investigations which are concerned with the description of the immediate social environment of the individual. Relationships between the household, social family, and primary family unit are given.

The basic methods for study of time changes have been analyzed. Although its precision is high when dealing with measurements which are positively correlated, the matched cohort technique may be associated with severe bias when the procedure for maintaining serial observations is dependent upon a periodic survey of a small geographic area. This type of follow-up fails to provide observations upon the considerable fraction of an original cohort which is mobile.

A procedure has been proposed for classifying families according to long-range developmental patterns. The classification scheme consists of summarizing observations for an individual family by a series of digits. These numerals constitute a unique combination which describes the developmental pattern for a given family. The numbers are then assembled into a manageable sequence of classes which have some sociological meaning.

An empirical curve has been found which describes closely the attrition experienced in the follow-up of family aggregates over a long period of time.

Out of a total of 6,069 white households present in 1922, 1,255, or 21 per cent, were identified in 1947, twenty-five years later. Of these families, 1,109 were enumerated in each of the five censuses. The curve of attrition for both white and non-white families is of the form $y = a - b \log t$.

CONCLUSION

1. The data accumulated during the five special censuses in the Eastern Health District provide useful demographic mate-

rial on the structure of family units. In particular, the procedure of matching the records of families enumerated in two or more censuses furnishes information of an unusual nature on time trends in individual family units and cohorts of families.

2. The biases in the matched cohort method, when follow-up is constrained to a limited area, would appear to be worthy of critical consideration in future planning of longitudinal studies. The inferences which may be possible from observations secured in a given plan of follow-up should be carefully assessed prior to heavy investment in a proposed procedure.

3. In spite of the biases in the matched cohort data presented in this investigation, the material may be exploited with benefit by internal analysis. We have found wide variation in long-range family patterns in respect to size. Although stable for a given family, the occupational status differs widely between families. The extent to which such variations may be associated with the prevalence of specific disease entities or with the adaptive behavior of individuals to chronic disease constitute examples of problems in which this data may be of value.

4. From a medical and a sociological point of view, the determination of the effects of the decline in family size, the decline in density of housing in the white segment, and the increase in density of housing in the non-white population would appear to be fruitful areas for further inquiry.

ACKNOWLEDGMENT

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SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

XXVI. THE PREDICTION OF PLANNED FERTILITY¹

CHARLES F. WESTOFF AND EDGAR F. BORGATTA²

THIS is the second of two articles in the Indianapolis Study series which, by the use of scale and factor analysis techniques, have endeavored to integrate the various findings resulting from the individually published analyses of data that were designed to test a large number of hypotheses on the social and psychological factors affecting fertility. The first of these two articles was published in the last issue of this *Quarterly*³ and was directed primarily toward the prediction of *total* fertility. This current paper, as the title indicates, is concerned mainly with the prediction of *planned* fertility. A more detailed statement of the three general objectives of these two reports was made in the first article: (1) to achieve the maximum prediction of fertility (utilizing scalable areas of content); (2) to achieve greater integration of the individual results; and (3) to test the sensitivity of the data to more advanced techniques of statistical analysis. In this analysis, as in the former article, these techniques consist mainly of cumulative scaling using the H-technique improvement, and the centroid method of factor analysis. Since this current article follows the same outline and utilizes the same procedures of analysis that were developed in the first article, the reader is

¹ This is the twenty-sixth of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton.

² From the Milbank Memorial Fund and Russell Sage Foundation respectively. The authors wish to acknowledge with thanks the material assistance in the treatment of these data generously afforded by the Laboratory of Social Relations at Harvard University.

³ See Borgatta, Edgar F. and Westoff, Charles F.: *Social and Psychological Factors Affecting Fertility*. xxv. *The Prediction of Total Fertility*. The Milbank Memorial Fund *Quarterly*, October, 1954, xxxii, No. 4, pp. 383-419 (Reprint pp. 1087-1123).

referred to the former publication for a description and account of the data and methods. It is recommended that both articles be read jointly.

The basic rationale underlying this second article is that the most significant theoretical questions that have been posed in the Indianapolis Study refer to differences in the fertility of *completely planned families*, that is, to the fertility of those couples (approximately one-fourth of the total sample) whose records of contraceptive practice and interview responses indicate that every pregnancy, or their voluntary childlessness, was the result of a deliberate process of planning.⁴ Eliminating the unplanned or "accidental" pregnancy as a variable permits a more refined analysis of the sociological and motivational factors that relate to decisions governing size of family. The restriction of the analysis to a selected sample of this nature, of course, reduces the demographic significance of the results. The preceding article, for this reason, dealt with the entire sample.⁵

The results of this first analysis indicated that the two chief factors accounting for most of the controlled variance of total fertility (the maximum proportion of the variance accounted for by all factors was 61 per cent) are the extent to which fertility was planned (located in a factor which was generalized as a "successful-rational-modern family" dimension), and a factor called the "material style of life" or socio-economic factor. Together these two factors accounted for over 59 per cent of the variance of total fertility. (See Appendix B.) The general nature of these relationships was, of course, realized by all

⁴ This group is classified in the Indianapolis Study in the "number and spacing planned" category and consists of couples who had no pregnancies that were not deliberately planned by stopping contraception in order to conceive.

⁵ Both studies, however, relate only to the "relatively fecund" wives, eliminating, for various reasons, those for whom there was some evidence of a history of sterility.

There is an intermediate level of analysis possible. Planning, in essence, suggests that the natural course of events is not the desirable or acceptable one. Thus, one major type of "residual" motivation factor is the general receptivity to having children with only a casual or loosely defined kind of planning. In other words, there are couples who are not actively trying to have another child but who are comparatively unconcerned about the possibility and may not use contraception regularly or efficiently. This type of difference was, to some extent, taken into account in the fertility-planning status classification of the Indianapolis Study.

Table 1. The intercorrelations¹ of fertility, thirteen attitudinal scales, and seven socio-economic variables for completely planned families.

VARIABLE IDENTIFICATION CODE ²																						
	F	1	2	3	4	5	6a	6b	7	8a	8b	9	10	13	14	15	16	17	18	19	20	
F	X																					
1	.02	X																				
2	.16	X	X																			
3	.07		X	X																		
4	.23		X	X	X																	
5	.14				X	X																
6a	.00				X	X	X															
6b	.00					X	X	X														
7	.03						.23	.03	.21	.01	.02	.04	.00	.07	.01	.18	.04	.12	.00	.02	.01	.01
8a	.37						X	X	X	.05	.36	.26	.14	.09	.11	.11	.10	.27	.16			
8b	.16						X	X	X	.16	.22	.21	.02	.20	.11	.13	.15	.20	.18	.11	.13	
9								X	X	X	.16	.07	X	X	.16	.11	.23	.10	.25	.27	.27	
10																		.00	.14	.03	.15	
13														X	X	.07	.16	.00	.14	.03	.15	
14															X	X	.50	.28	.21	.43	.40	
15																X	X	.36	.48	.48	.42	
16																	X	X	.29	.37	.48	
17																		X	.42	.51	.67	
18																			X	.57	.66	
19																				X	.62	
20																					X	

¹ N = 139 (the highest number of known scores on all variables). These coefficients were calculated by the Pearsonian product-moment formula. A coefficient of approximately $\pm .20$ is required for a statistically significant departure from zero at the 1 per cent level of probability and one of approximately $\pm .10$ for the 5 per cent level according to R. A. Fisher's formula.

² The meaning and correlated direction of the variables

- F. High fertility.
 1. Low sensitivity to inducements to fertility.
 2. Favorable assessment of conditions.
 3. Most liking for children
 4. Low felt restriction.
 5. High assessment of childhood.
 6a. Low adherence to tradition (behavior of women).
 6b. High adherence to tradition (general values).
 7. High interest in religion.
 8. High rating of personal inadequacy (self).
 9. High rating of personal inadequacy (husband).
 10. Least feeling of personal inadequacy (husband).
 11. High rating of personal inadequacy (husband).
 12. High rating of personal inadequacy (husband).
 13. High rating of personal inadequacy (husband).
 14. High rating of personal inadequacy (husband).
 15. High rating of personal inadequacy (husband).
 16. High rating of personal inadequacy (husband).
 17. High rating of personal inadequacy (husband).
 18. High rating of personal inadequacy (husband).
 19. High rating of personal inadequacy (husband).
 20. Rent at interview.

9. Least perception of deterrents to fertility.

10. High tendency to plan in general.

11. High satisfaction with husband.

12. High satisfaction of wife.

13. High education of husband.

14. High education of husband.

15. High net worth.

16. High rating on Chapin's scale.

17. High rating on Chapin's scale.

18. High rating on Chapin's scale.

19. High rating on Chapin's scale.

20. Rent at interview.

connected with the Indianapolis Study. The main contribution of the first analysis (aside from its testing the data for scalability) was that it demonstrated how little the social-psychological variables collectively considered added to the prediction of total fertility. One of our main interests in this second analysis is to see whether a similar pattern prevails for the prediction of *planned* fertility.

THE CORRELATIONAL ANALYSIS

Our analytical problem in this paper, as in the preceding one, is to evaluate the relationships of twenty variables with planned fertility. For each of these variables, with the exception of fertility itself and the socio-economic variables, a cumulative scale had been constructed.⁶ The interrelationships of these variables are shown in Table 1. The first row of the table shows the correlational values of all variables with planned fertility. The only two variables that reveal a statistically significant association with planned fertility are Scale 3 which is liking for children (a correlation of +.23) and variable 19 which is the husband's average annual income since marriage (a correlation of +.19). It is interesting to note that of the total of 20 correlation coefficients, 15 are of a lower value than the comparable relationships with total fertility evidenced in the preceding article.⁷ The reason for this decrease in prediction is the fact that the variable of fertility planning has, by definition, been eliminated in the current analysis. The consequence of this is a reduction in the magnitude of the relationships that are correlated with fertility through the jointly related variable of fertility planning. Also involved is the reduced sample size and the lowered variance of fertility in the restriction of the sample to planned families.⁸ However, neither of these latter two considerations have any automatic consequences for the magnitude of the correlations. The net implication of this reduction in

⁶ *Op. cit.*, see Table 1 for the scale distributions, and Appendix B for a listing of the items included in each scale.

⁷ *Op. cit.*, see Table 2.

⁸ The standard deviation for the distribution of size of planned families is ± 1.06 as compared with ± 1.47 for the distribution of total fertility.

prediction would appear to be that at the level of completely planned fertility, having removed the variable of fertility planning with its high association with total fertility, we are confronted with the exceedingly complicated task of trying to account for the wide range of couples' feelings, values, attitudes, and circumstances relevant to the number of children they decide to have during a period of some twelve to fifteen years of married life.

THE FACTOR ANALYSIS

The purpose in employing factor analysis in this (and in the preceding) study is to attempt to uncover and specify the number and types of common dimensions or "factors" that account for the intercorrelations of the 21 variables. In other words, one objective is to reduce the number of variables to a smaller number of common factors. The results of the factor analysis after rotation⁹ are presented in Table 2. As before, the rotation was determined chiefly by our interest in the variance of fertility. Whatever is common to planned fertility, thus, is directly readable in the columns of the factors in which this variable is loaded.

It will be noted from Table 2 that only two of the five factors found are of any relevance to planned fertility—Factor I and Factor IV—and of these two, Factor IV is by far the more significant. With some exceptions, the factor matrix in Table 2 is very similar in structure to that in the preceding analysis of total fertility.¹⁰

Looking first at Factor I, we again clearly recognize the "material style of life" or socio-economic factor. The variables most highly related to this Factor are rent, income, rating on Chapin's Social Status Scale, education of husband, net worth, education of wife, occupational class, assessment of (material) conditions,¹¹ and sensitivity to (economic) inducements to

⁹ The factor matrix before rotation appears in Appendix A.

¹⁰ Compare Table 2 with the corresponding table reproduced from the former article, in Appendix B.

¹¹ This scale includes 6 items from the Index of Economic Tension and 3 items from the Index of Economic Security. These two Indexes were used separately in earlier analyses of Indianapolis data.

have children. The loadings of these variables in this Factor range from .82 to .31, in the order listed. The obvious and significant difference between this Factor and the corresponding Factor in the first article, is that *planned fertility* exhibits a loading of only .12 here while in the first factor analysis *total fertility* revealed a loading of .38. This difference, as we stated above, is due, in part at least, to the restriction of the sample to completely planned families and the resultant elimination of the variable of fertility planning. In other words, our previous higher correlations between the socio-economic variables and

Table 2. The rotated¹ factor matrix.

IDENTIFICATION CODE	VARIABLE	ROTATED FACTORS					
		I	II	III	IV	V	Communality
F.	High Fertility	.12	-.02	-.01	-.40	-.02	.18
1.	Low Sensitivity to Inducements to Fertility	.31	-.13	-.27	.08	-.10	.20
2.	Favorable Assessment of Conditions	.38	-.07	-.02	-.08	-.51	.42
3.	Most Liking for Children	.14	-.25	-.10	-.58	.16	.45
4.	Low Felt Restriction	-.03	-.22	-.46	-.22	-.05	.31
5.	High Assessment of Childhood	.20	-.27	-.02	-.02	.26	.18
6a.	Low Adherence to Tradition (Behavior of Women)	.15	-.02	.16	.15	-.12	.09
6b.	High Adherence to Tradition (General Values)	.05	-.12	.11	-.35	-.12	.17
7.	High Interest in Religion	-.14	-.29	.22	-.25	.15	.24
8a.	Least Feeling of Personal Inadequacy (Self)	.18	-.55	-.11	.12	-.07	.37
8b.	Least Feeling of Personal Inadequacy (Husband)	.03	-.54	-.04	.03	.13	.31
9.	Least Perception of Deterrents to Fertility	.20	-.11	-.49	-.38	.22	.49
10.	High Tendency to Plan in General	.28	-.50	.00	.04	-.17	.36
13.	High Satisfaction with Husband	.14	-.31	-.30	.04	-.13	.22
14.	High Education of Wife	.59	-.03	.10	.05	.19	.40
15.	High Education of Husband	.64	-.20	.08	-.11	.20	.51
16.	High Occupational Class	.55	.09	-.10	-.03	-.06	.33
17.	High Net Worth	.62	-.01	-.15	.07	-.21	.46
18.	High Rating on Chapin's Scale	.74	.03	.05	-.05	.19	.59
19.	High Average Annual Earnings of Husband	.77	-.07	-.03	.00	-.20	.64
20.	Rent at Interview	.82	.04	.03	.08	.00	.68

¹ The factor matrix before rotation appears in Appendix A.

total fertility were due in large part to the relationships between the socio-economic variables and fertility-planning status and the latter's association with total fertility. The reduction in the predictive value of this "material style of life" factor is considerable; it accounts for only between 1 and 2 per cent of the variance of planned fertility.

The main factor relevant to planned fertility in this analysis is unquestionably Factor IV, which contains 16 per cent of the variance of planned fertility. When we consider the fact that *all* five factors defined in this study collectively account for only 18 per cent of the total variance, Factor IV assumes an even greater significance.

Fortunately, the identity of Factor IV seems relatively clear. The variable with the heaviest loading (.58)¹² in this Factor is the scale on "liking for children." A close examination of the correlation between the scale on "liking for children" and size of planned families reveals that the correlation is defined primarily at the break between childlessness and having children. In other words, the predictive value of this scale is not as sensitive to the differences between small and large planned families as it is to the differences between childless couples and those with children.¹³ Two other variables with significant loadings in Factor IV support this interpretation, namely the scale on the perception of (non-economic) deterrents to fertility and the scale on felt restriction (non-economic) of personal freedom as a result of children.¹⁴ The two other variables loaded in this Factor which provide some further clues to the substantive nature of the factor are adherence to tradition and interest in religion. Specifically, these findings indicate that *high* planned

¹² For the sake of simplicity, we are ignoring signs in our discussion. Examination of Table 2 will reveal that "high fertility" has a loading of -.40 and "most liking for children" a loading of -.58. Reversing the signs and discussing the relationships in the "positive" direction contributes to easier reading.

¹³ Lois Pratt and P. K. Whelpton are undertaking the preparation of an article which will analyze in more detail the data on "liking for and interest in children" and they will elaborate this point more fully.

¹⁴ Part xxvii of the series, by Ruth Riemer and P. K. Whelpton, also in this issue, treats the original Indianapolis Study hypothesis on personal freedom in detail.

fertility is directly associated with a *high* liking for children combined with *little* perception of children interfering with the style of life the parents wish to follow, and is also associated with a *strong* commitment to traditional values and a *high* interest in religion. This configuration of common variance prompts an identification of this Factor as a "child affect—respectability" factor. Our reasoning is that although American society is composed of sub-cultures which vary in the extent to which children and family life are perceived as compatible with different life styles, the dominant cultural definition of children is clearly "positive." Social scientists are increasingly characterizing American society (especially the so-called "middle class" with its family adjustment and child psychology consciousness) as a child-centered culture.¹⁵ Couples who remain childless to some extent feel defensive in the presence of parents if the subject of children is raised. One sociological consequence of being childless (especially during the first ten to fifteen years of marriage) is a decreased commonality of interests and concerns, and thus, a diminished basis for shared group participation. This group differentiation tends to be reinforced by the partial ecological segregation of the two groups.¹⁶ The suburban trend in America, for example, is definitely a family-oriented phenomenon. Thus, the cluster of liking for and interest in children, traditional values and religious interests would appear simply to reflect one of the dominant, though not imperative, ideological patterns of American culture. The fact is, nevertheless, that there *are* voluntarily childless couples in American society who express only moderate interest or even disinterest in children. It is plausible to assume that this *type* of couple will be more career-oriented, less community minded,

¹⁵ This characterization, even if accurate, has no necessary implications for size of family since a concentration on the raising of children does not in any way imply large families.

¹⁶ The reasons why this pattern of differentiation does not produce any marked social isolation of childless couples is obviously that there are areas of common interest (e.g. professional interests) that transcend family interests plus the fact that childless couples (particularly if the childlessness is voluntary as it presumably is for these couples) are themselves socially grouped around other interests.

regard themselves as more "emancipated," and will be more interested in extra-familial leisure activities. In short, the internalization of positive traditional and religious values is to some extent inconsistent with this style of life. In the context of the American normative system generally, this style of life is a deviant although permitted variation. Conformity to group norms, in itself, will not suffice as an adequate explanation of this Factor since one can readily perceive types of reference groups to which childlessness *per se* would be the mode of conformity.¹⁷

A significant aspect of the statistical relationships presented in Table 2 is the fact that Factors I and IV are, by definition, orthogonal. In substantive terms, this means that the "child affect—respectability" factor is distinctly different from, or independent of, the "material style of life" factor. Only husband's education shows some slight involvement. The variable of income has an absolute zero loading in Factor IV.

There is an important problem of methodology that complicates the interpretation of the main findings, namely, the *ex post facto* nature of the Indianapolis Study. The net result of this type of research design for the relationships described above is that we cannot determine the extent to which liking for children is a motivational precedent or consequent to having children. The fact that the sample in the analysis is confined only to planned pregnancies modifies the problem to some extent. Nevertheless, we are forced to make the plausible but indeterminate assumption that the variable operates in both directions.

In evaluating the significance of these findings, one question recurrently intrudes itself. To what extent is the relationship between liking for children and having children simply a truism? Is this relationship a "sufficient" explanation of planned fertility? Of course, the fact that this Factor accounts for only 16 per cent of the variance of planned fertility makes this con-

¹⁷ Illustratively, one might think of certain types of intellectual and artistic interest groups, or friendship groups that develop around work interest or social and recreational activities.

cern somewhat academic. However, our opinion is that "liking for children" is by no means the "ultimate" researchable level of analysis and that any new studies of fertility that develop in the future might very legitimately aim at the antecedents to the factor we have described. Such a theoretical point of departure could well proceed from the general question of what styles of life in American society are compatible or incompatible with the complex of psychological, time, energy, and economic demands that having children implies.

We are not basically concerned with the identification of those Factors which are irrelevant to our fertility variable. In general, their structure is similar to that evidenced by the factor analysis for the total sample. We can, as before, identify Factor II with its main loadings on feelings of personal adequacy, tendency to plan in general, and marital satisfaction as the "personal-family adjustment" factor. The pattern of Factor III reveals several changes from its previous structure. These changes make its previous identification as a "conformity-tradition" factor no longer applicable. The new Factor V is very similar to its predecessor and retains its interesting residual inverse relationship between "status" (education and Chapin's Social Status Scale) and "class" (income and net worth).

GENERAL SUMMARY

The basic purpose of this general re-examination of the Indianapolis Study data was to test the sensitivity of the data to the recently developed techniques of scaling and within the limits of the scale definitions (which deliberately cut across the original hypothesis designations)¹⁸ to ascertain the maximum level of prediction of fertility. A total of thirteen scales was constructed and a factor analysis was performed with the intercorrelation of these thirteen variables in addition to seven

¹⁸ In this important sense, these two articles differ in method and results from the article by Westoff and Kiser. See Westoff, Charles F. and Kiser, Clyde V.: *Social and Psychological Factors Affecting Fertility*. xxi. An Empirical Re-Examination and Intercorrelation of Selected Hypothesis Factors. The Milbank Memorial Fund *Quarterly*, October, 1953, xxxi, No. 4, pp. 421-435 (Reprint pp. 953-967).

socio-economic variables, fertility planning and fertility. The first of the two articles focussed on the prediction of total fertility. The significant factors in this prediction were found to be the socio-economic or "material style of life" factor and the extent to which fertility was planned (a factor generalized as the "successful-modern-rational family" factor) which together accounted for 59 per cent of the total fertility variance that was controlled. The remaining factors added only 2 per cent to this prediction.

In the analysis just concluded, the identical statistical procedures were employed. Here our interest was confined to the more theoretically significant question of the prediction of *planned* fertility. The five factors isolated for this population, however, contributed a net control of only 18 per cent of the variance of planned fertility. Of the total variance only a little over 1 per cent was contributed by the socio-economic or "material style of life" factor. The major factor relevant to planned fertility (accounting for 16 per cent of the variance) is a factor which we identified as a "child-affect—respectability" factor. This factor was defined largely by variables relating to liking for and interest in children, adherence to traditional values, and interest in religion. The main reason for the reduction in prediction is the exclusion (by definition) of the fertility planning variable.

The nature of these findings leads us to suggest that future studies should, for theoretical purposes, conceptualize liking for children and its attendant value orientations (tradition and religion) theoretically as the "correct" response to American middle-class values and to examine deviations from this response pattern in terms of the compatibility of children with different styles of life.

Appendix A. The factor matrix before rotation.¹

IDENTIFICATION CODE	VARIABLE	UNROTATED FACTORS					Communality
		I	II	III	IV	V	
F.	High Fertility	.20	-.11	.22	-.20	-.18	.17
1.	Low Sensitivity to Inducements to Fertility	.35	.05	-.21	-.11	.16	.21
2.	Favorable Assessment of Conditions	.42	.22	-.26	-.17	-.31	.42
3.	Most Liking for Children	.38	-.41	.33	-.16	-.11	.46
4.	Low Felt Restriction	.20	-.36	-.14	-.35	.13	.33
5.	High Assessment of Childhood	.28	-.15	.11	.19	.18	.18
6a.	Low Adherence to Tradition (Behavior of Women)	.10	.20	-.10	.14	-.08	.09
6b.	High Adherence to Tradition (General Values)	.06	-.22	.12	-.06	-.30	.16
7.	High Interest in Religion	.04	-.35	.20	.23	-.18	.25
8a.	Least Feeling of Personal Inadequacy (Self)	.39	-.23	-.32	.23	.08	.37
8b.	Least Feeling of Personal Inadequacy (Husband)	.26	-.37	-.13	.28	.10	.31
9.	Least Perception of Deterrents to Fertility	.37	-.31	.18	-.39	.27	.49
10.	High Tendency to Plan in General	.47	-.14	-.27	.20	-.08	.36
13.	High Satisfaction with Husband	.31	-.17	-.30	-.10	.13	.24
14.	High Education of Wife	.48	.29	.20	.16	.16	.41
15.	High Education of Husband	.64	.13	.24	.16	.09	.52
16.	High Occupational Class	.45	.33	.06	-.15	.07	.34
17.	High Net Worth	.53	.34	-.15	-.13	.06	.44
18.	High Rating on Chapin's Scale	.59	.43	.19	.13	-.10	.60
19.	High Average Annual Earnings of Husband	.72	.36	-.06	-.03	-.04	.65
20.	Rent at Interview	.65	.50	.07	.05	.08	.69

¹ The factor matrix after rotation appears in Table 2 in the text.

Appendix B. The rotated factor matrix¹ (based on data for all couples and relevant to total fertility).

IDENTIFICATION CODE	VARIABLE	ROTATED FACTORS					Communality
		I	II	III	IV	V	
FP.	Effective Fertility Planning	.40	-.04	.01	.61	.08	.54
F.	Low Fertility	.38	.08	-.10	.67	.00	.61
1.	Low Sensitivity to Inducements to Fertility	.18	-.21	-.34	-.06	-.07	.20
2.	Favorable Assessment of Conditions	.47	-.26	.04	-.03	-.27	.36
3.	Most Liking for Children	.06	-.40	.11	-.11	.24	.25
4.	Low Felt Restriction	-.04	-.57	-.36	.10	-.06	.47
5.	High Assessment of Childhood	.17	-.28	.00	-.05	.24	.17
6a.	Low Adherence to Tradition	.14	.10	-.21	.10	-.09	.09
6b.	Low Adherence to Tradition	.17	.04	-.28	.05	.14	.13
7.	Low Interest in Religion	.08	.22	-.26	.15	-.14	.17
8a.	Least Feeling of Personal Inadequacy (Self)	.26	-.54	.18	.19	-.07	.43
8b.	Least Feeling of Personal Inadequacy (Husband)	.07	-.36	.19	.11	-.04	.18
9.	Least Perception of Deterrents to Fertility	.06	-.51	-.29	-.05	.18	.38
10.	High Tendency to Plan in General	.28	-.35	.19	.05	-.06	.24
13.	High Satisfaction with Husband	.10	-.46	.04	.20	-.08	.27
14.	High Education of Wife	.59	-.02	-.05	.06	.36	.49
15.	High Education of Husband	.58	-.03	-.01	-.03	.19	.38
16.	High Occupational Class	.55	-.04	-.10	-.01	.02	.31
17.	High Net Worth	.67	-.04	.04	.04	-.31	.55
18.	High Rating on Chapin's Scale	.80	.02	-.06	.08	.01	.65
19.	High Average Annual Earnings of Husband	.75	-.03	.01	-.09	-.20	.62
20.	Rent at Interview	.85	.04	.02	.03	-.15	.75

¹ Source: Table 3 in Borgatta, Edgar F. and Westoff, Charles F.: *Social and Psychological Factors Affecting Fertility*. xxv. *The Prediction of Total Fertility*. *The Milbank Memorial Fund Quarterly*, October, 1954, xxxii, No. 4, pp. 383-419 (Reprint pp. 1087-1123).

SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

XXVII. ATTITUDES TOWARD RESTRICTION OF PERSONAL FREEDOM IN RELATION TO FERTILITY PLANNING AND FERTILITY¹

RUTH RIEMER AND P. K. WHELPTON

THE small family pattern as it has developed in Western society has been intimately connected with individualism—a high valuation of the individual *per se* and the demand for conditions in which his potentialities may be most fully developed. Within those segments of society where this pattern has most fully developed, the practice of contraception is widespread, and fertility differentials may be expected to correlate with ability to support children at desired standards and with the relative importance of family building in the individual's scheme of values. Several of the hypotheses of the Indianapolis Study fit into this general theoretical framework. Among them is Hypothesis 7, with which this paper deals. It may be assumed that by reason of their value hierarchies some people feel the need for a kind or a degree of personal freedom with which child care interferes. According to this hypothesis, such people are motivated to practice contraception more effectively and to plan smaller families than people whose value systems make less demand for such personal freedom. A more precise statement is: "The stronger the feeling that children interfere with personal freedom, the higher the proportion of couples practicing contraception effectively and the smaller the planned family."

To test this hypothesis concerning motivation for fertility control and small families by using the data of the Indianapolis Study, it is necessary to assume (1) that "the feeling that chil-

¹ This is the twenty-seventh of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton.

dren interfere with personal freedom" is so stable and basic a psychological factor that it persists relatively unchanged throughout varying experiences, including those of parenthood itself, and (2) that such "feeling . . ." can, at least in some rough measure, be discovered and measured in responses to questions of the type used.

This paper reports very briefly the findings for the hypothesis that a "feeling that children interfere with personal freedom" motivates fertility control and small families. At first glance the data appear to refute the hypothesis. However, both theoretical considerations and the findings of the analysis suggest that, rather than actually refuting the hypothesis, the data are not adequate to test it. An alternative hypothesis, that such "feeling . . ." is the result of experience with children, is then proposed and used as the frame for a more detailed examination of the data on couples with children. Finally the data on 135 childless couples are examined for their bearing on both hypotheses.

THE DATA

As in most other reports in this series, the data pertain to the inflated sample of 1,444 "relatively fecund" couples. All of them were native-white, Protestant, with at least eight years of schooling; they married for the first time in 1927-1929 and were living with the same spouse when interviewed; wives were under thirty, and husbands under forty years of age at marriage; and they had spent most of their married life in a large city.²

The usual categories for success in fertility planning³ are employed. Childless couples are treated separately because they were asked attitude questions which were phrased differ-

² See Whelpton, P. K. and Kiser, C. V.: Social and Psychological Factors Affecting Fertility. v. The Sampling Plan, Selection, and the Representativeness of Couples in the Inflated Sample. *The Milbank Memorial Fund Quarterly*, October, 1945, xxiii, No. 4, pp. 49-93 (Reprint pp. 163-207).

³ See Whelpton, P. K. and Kiser, C. V.: Social and Psychological Factors Affecting Fertility. vi. The Planning of Fertility. *The Milbank Memorial Fund Quarterly*, January, 1947, xxv, No. 1, pp. 63-111 (Reprint pp. 209-257).

ently and had meanings which differed from those asked of couples with children. Number of living children, rather than number of live births, is used as the measure of family size because it is more appropriate for the alternative hypothesis to which most of this paper is directed.

Items designed to determine the "feeling that children interfere with personal freedom" all come from the printed questionnaires which were filled out by wife and husband separately at the interviewer's second visit. A set of five questions deals with felt restriction of specific activities due to the presence of children. For couples with children, they refer to actual feeling of restriction:

Since your first child was born, how much more time would you have liked to have for:

- a. Going to movies?
- b. Taking trips to visit friends, relatives, and interesting places?
- c. Going to clubs, lodges, meetings, dances, parties, etc.?
- d. Entertaining friends?
- e. Reading, resting, radio-listening, etc.?

(Five possible replies to each: "very much more time," "much," "some," "little," and "very little.")

For childless couples these questions refer to anticipated feeling:

Everyone knows that people who have children are not as free to come and go as they were before the children were born.

If you had children and could not spend as much time on the following things, how much would you mind:

- a. Going to fewer movies?
- b. Taking fewer trips to visit friends, relatives and interesting places?
- c. Going less often to clubs, lodges, meetings, dances, parties, etc.?
- d. Having less time for entertaining friends?
- e. Having less time for reading, resting, radio-listening, etc.?

(Five possible replies to each: "mind very much," "much," "some," "little," and "very little.")

Two more general questions were asked:

How much has it bothered you to be tied down by your children?

(For childless couples: How much would it bother you to be tied down by children?)

(Five possible responses ranging from "very much" to "very little.")

and, as one of a series:

How much has . . . not wanting to be tied down more by children . . . discouraged you and your husband [wife] from having more children?

(For childless couples, omit "more.")

(Five possible responses ranging from "discouraged very much" to "very little or not at all.")

Two items in a series trying to measure the possible effectiveness of various measures to alleviate the problems of parents are relevant:

How much would you have been encouraged to have more children. . . .

(For childless couples, omit "more.")

- a. If there were visiting nurses from the schools who would help take care of your children when they were sick in bed?
- b. If there were nurseries organized by the schools where mothers could leave their children when they wanted to go out during the day?

(Five possible responses for each, ranging from "encouraged very much" to "very little.")

As the final step in the interviewing of each couple, the interviewer rated wife and husband on a number of characteristics, one of which was "feeling that children restrict freedom." The alternatives she could check were:

Loss of freedom, if felt, of no consequence.

Loss of freedom felt, rarely bothersome.

Frequently bothered by feeling tied down.

Considerable feeling of restriction, sometimes rebels.

Feels tied down and rebellious most of the time.

For childless couples the interviewer was instructed to use her judgment as to how the spouses would feel if they had children.

In addition to the items above referring directly or indirectly to the existence of "feeling . . .," various kinds of information have possible usefulness in accounting for the degree of "feeling . . ." or in "factoring out" of it the influence of certain differential experiences. Each spouse estimated the actual frequency of certain activities:

Since your first child was born, how often have you gone:
(For childless couples: During most of your married life how often have you gone:)

- a. To movies?
- b. On trips to visit friends, relatives, and interesting places?
- c. To clubs, lodges, meetings, dances, parties, etc.?

(For each, five possible replies ranging from "very seldom" to "very often.")

Wives reported the amount of paid domestic help after the birth of the first child or, if childless, after marriage. Information about the wife's employment before and after marriage, her age at marriage, the pattern of family growth, and the summary index of socio-economic status is also available.

Indices of Attitudes. Since the attitude items failed to yield a unidimensional attitude scale⁴, items were combined in the usual manner by adding the response codes to get summary indices. The items about possible encouragement of fertility by the availability of visiting nurses and school nurseries were omitted from the summary indices because the direction of relationships with other items was the inverse of that presupposed by the response coding, indicating that these items were not measuring what had been intended. Matrices of contingency coefficients (*see* Table 1) and latent structure analysis relating to the remaining eight items supported the view that the five "more time wanted" items were on a somewhat differ-

⁴For an account of attempts to use the methods of Guttman scalogram and Lazarsfeld latent structure analysis, *see* Riemer, R.: *Social Mobility and Mobility Aspiration in Relation to Fertility Planning and Fertility* (Ph.D. dissertation, University of Michigan, 1953), Appendix A.

ATTITUDE ITEM	COEFFICIENT OF CONTINGENCY (DEGREES OF FREEDOM) ²						
	2	3	4	5	6	7	8
WIVES							
1. Discouraged . . . Avoid Being Tied Down	.385(6)	.311(9)	.260(8)	.237(9)	.168(8)	.183(9)	.251(9)
2. Bothered by Be- ing Tied Down		.359(6)	.354(6)	.314(6)	.329(6)	.312(6)	.308(6)
3. Interviewer Rating			.235(8)	.191(9)	.279(8)	.185(9)	.269(9)
<i>Wanted More Time For:</i>							
4. Movies				.570(9)	.506(8)	.450(9)	.403(9)
5. Trips					.555(9)	.551(9)	.423(9)
6. Clubs . . . Parties, etc.						.514(9)	.358(9)
7. Entertaining							
8. Reading . . . , etc.							.152(9)*
HUSBANDS							
1. Discouraged . . . Avoid Being Tied Down	.342(6)	.333(8)	.218(6)	.233(9)	.226(6)	.179(8)	.215(9)
2. Bothered By Be- ing Tied Down		.376(6)	.380(4)	.372(6)	.340(4)	.344(6)	.357(6)
3. Interviewer Rating			.230(6)	.238(9)	.213(6)	—	.179(9)
<i>Wanted More Time For:</i>							
4. Movies				.548(6)	.470(4)	.451(6)	.365(6)
5. Trips					.547(6)	.595(9)	.518(9)
6. Clubs . . . Parties, etc.						.502(6)	.417(6)
7. Entertaining							.543(9)
8. Reading . . . , etc.							

Table 1. Interrelationships among attitude items for all couples with children.¹

* $.02 < P(X^2) < .05$. All other $P(X^2) < .01$; in most cases $P(X^2) < .001$.

¹ $N = 1,301 - 1,309$. A few wives and husbands failed to respond to some items.

² $C = \sqrt{\frac{X^2}{X^2 + N}}$. C not computed where $P(X^2) > .05$. All chi-squares were reduced proportionately to the inflation of the sample. (The N in the formula for C is also reduced.) Because chi-square is so reduced, P values are only approximate. Although C values are not strictly comparable unless based on the same number of degrees of freedom (which are given in parentheses), the relative magnitudes of the C values are little affected by the varying upper limit for C . Corrections for the varying upper limit require assumptions not justified with these data.

ent dimension than the two more general items and the interviewer rating.⁵ Accordingly, two summary indices were formed which are referred to throughout this report as the summary

⁵ The item "bothered by being tied down by your children" appears from Table 1 to fit equally well with either group. It was placed with the smaller group primarily because of its general reference, i.e., to limit the other group to "more time wanted" items.

SUMMARY INDEX ¹	INDEX OF "FEELING . . ."				INDEX OF "MORE TIME WANTED"			
	Wives		Husbands		Wives		Husbands	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
0-3 (Most)	26	2.0	27	2.1	76	5.8	20	1.5
4	83	6.3	59	4.5	98	7.5	49	3.7
5	110	8.4	81	6.2	287	21.9	188	14.4
→ 6	281	21.5	262	20.0	234	17.9	183	14.0
7	527	40.3	623	47.6	301	23.0	315	24.1
8	282	21.5	257	19.6	141	10.8	208	15.9
9 (Least)					172	13.1	346	26.4
Total	1,309	100.0	1,309	100.0	1,309	100.0	1,309	100.0
Total With Strong "Feeling . . ." or Wanting "Much More Time" (Codes 0-6)	500	38.2	429	32.8	695	53.1	440	33.6
	Couples				Couples			
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Have Strong "Feeling . . ." or Want "Much More Time" (Both Wife's and Husband's Codes 0-6)	241	18.4			280		21.4	
→ Lack Strong "Feeling . . ." or Want "Little More Time" (Both Wife's and Husband's Codes 7-9)	621	47.4			454		34.7	
Mixed								
Wife 0-6, Husband 7-9	259	19.8			415		31.7	
Wife 7-9, Husband 0-6	188	14.4			160		12.2	
Total	1,309	100.0			1,309		100.0	

→ indicates dichotomy points.

¹ Maximum range for index of "feeling . . ." 0-8; for index of "more time wanted," 1-9.

Table 2. Distributions of couples with children on summary indices of "feeling . . ." and "more time wanted."

index of "feeling . . .," derived from three items, and the summary index of "more time wanted," derived from five items.*

* For the index of "feeling . . ." for each spouse the sum of item scores could range from 3 to 27. This sum was multiplied by three and the first digit of the product taken as the index, giving the latter a possible range of 0 to 8. For the index of "more time wanted" for each spouse the sum of item scores could range from 5 to 45. This sum was multiplied by two and the first digit of the product taken as the index, giving the latter a possible range of 1 to 9. Indices for couples, used only in Tables 15 and 16 in the Appendix of this report, were obtained by summing the indices for wife and husband.

The two summary indices are moderately closely related to one another.⁷

In most of the analysis reported here, the exact index values were not used. Instead, the sample was dichotomized by classifying wives, husbands, and couples as having or not having strong "feeling . . ." and as wanting or not wanting much "more time." The distributions of wives, husbands, and couples on each index and the dichotomy point for each distribution are shown in Table 2.⁸

THE FEELING THAT CHILDREN INTERFERE WITH PERSONAL FREEDOM AS MOTIVATION FOR FERTILITY CONTROL AND SMALL FAMILIES AMONG COUPLES WITH CHILDREN

The first part of the hypothesis is: "The stronger the feeling that children interfere with personal freedom, the higher the proportion of couples practicing contraception effectively." For couples with children summary indices of "feeling . . ." and of "more time wanted" are clearly related to degree of success in fertility planning,⁹ but the direction of the relationship is the reverse of that hypothesized. In general the proportion of couples who planned both number and spacing of their children decreases, and the proportion of couples with excess fertility increases, with greater strength of "feeling . . ." and with greater desire for "more time" for various activities.¹⁰ The pattern is clearer if the "number and spacing" and "number planned"

⁷ For all wives with children, the coefficient of contingency is .379, for husbands .393, with 16 degrees of freedom each, and for couples .489, based on 9 degrees of freedom.

⁸ The skewness of the item distributions (see Figures 1 and 2) forces a somewhat extreme dichotomous classification, especially for the index of "feeling . . ." E.g., two item scores of 7 (the next to least feeling of restriction) with the other score 9 (least feeling of restriction) yields an index of 6 [first digit of "69" from $3(7+7+9) = 69$] on the summary index of "feeling . . ." and a wife or a husband with this response pattern is thus classified as showing strong "feeling . . ." If both husband and wife show such minor evidence of feeling restricted, the couple is classified as having strong "feeling . . ." The categories are labelled 'having strong feeling . . .' and 'lacking strong feeling . . .' only to have simple labels for contiguous segments of a continuum.

⁹ $P(X^2) < .001$ for wives, for husbands, and for couples for both indices. C varies from .218 to .254, based on 12 degrees of freedom, for spouses separately; C is .287, based on 21 and 30 degrees of freedom for the two indices, for couples. When the variables are dichotomized so that d.f. = 1, $P(X^2) < .02$ for all groups.

¹⁰ The detailed tables are given for reference in the Appendix, Tables 15 and 16.

DEGREE OF ATTITUDE	INDEX OF "FEELING . . ."			INDEX OF "MORE TIME WANTED"		
	Wives	Husbands	Couples	Wives	Husbands	Couples
PER CENT OF FAMILIES SUCCESSFULLY PLANNED ¹						
Have Strong "Feeling . . ." or Want Much "More Time"	31.2	30.1	27.8	32.7	29.3	28.2
Lack Strong "Feeling . . ." or Want Little "More Time"	39.8	39.7	41.9	40.9	40.2	44.3
Mixed			33.8			34.4
AVERAGE NUMBER OF LIVING CHILDREN IN SUCCESSFULLY PLANNED ² FAMILIES						
Have Strong "Feeling . . ." or Want Much "More Time"	1.84	1.91	1.85	1.85	2.05	2.09
Lack Strong "Feeling . . ." or Want Little "More Time"	1.78	1.75	1.73	1.75	1.70	1.69
Mixed			1.89			1.80

Table 3. Success in fertility planning among families with children, and average number of living children in successfully planned families with children, by indices of "feeling . . ." and "more time wanted."¹

¹ For classification of indices, see Table 2. For numbers of cases, see Tables 2, 17, and 18.

² Successfully planned families are number and spacing planned and number planned, excluding childless couples.

groups are combined. There are a good many irregularities, but this general pattern holds for wives, for husbands, and for couples.¹¹ When summarized with the variables dichotomized, as in the upper part of Table 3, the relationship is without exception the reverse of that hypothesized.

The second part of the hypothesis is: "The stronger the feeling that children interfere with personal freedom, . . . the smaller the planned family." For successfully planned families with children, chi-square tests show a significant association between number of living children and attitude only for husbands on the "more time wanted" index. But since this lack of statistical significance might be due in part to the small number of cases¹² and in part to the necessity of combining in one category all families with three or more children, rather than to the absence of association between attitude and planned family size, the data were examined further. Differences in family size by

¹¹ One irregularity tends to support the hypothesis—a tendency for the proportion of successful planners to be higher among wives, husbands, and couples with the strongest "feeling . . ." than among those in the next category.

¹² There are 478 successful planners with children in the inflated sample, of whom 251 are independent cases.

summary index values are small, but quite consistently contradict the hypothesis. The average number of living children among successful planners clearly tends to be larger among wives and husbands expressing strong "feeling . . ." or a desire for much "more time" than among those not expressing such attitudes. The relationship may be examined in detail in the Appendix (Tables 17 and 18). It is summarized with the variables dichotomized in the lower part of Table 3.

It is evident that the above data offer no support for the hypothesis that a feeling that children restrict personal freedom motivates couples to control fertility and plan small families. Consistent inversion of the expected relationships calls for explanation, however.

No one would seriously argue that people who feel strongly that children interfere with their personal freedom tend to be more careless in their use of contraception or would plan larger families than people not having such an attitude. Attention to the wording of the questions on which the attitude indices are based suggests that for couples with children these questions have little relevance to the motivation for fertility control. They refer rather to the experiences encountered in caring for children.¹³ For the deliberately childless couples, the questions asked are directly relevant and supply some evidence in support of the hypothesis. But the number of childless couples in the study is small, the time reference of their responses is indefinite, and their response frequencies cannot be compared directly with those of any other group. Accordingly, their usefulness for this purpose is severely limited.¹⁴

We conclude, therefore, that the data are inadequate to test the hypothesis originally formulated. The reasons may be summarized briefly. First, in the design of the Study it was assumed that the psychological factors which motivate fertility control

¹³ The item "How much has . . . not wanting to be tied down more by children . . . discouraged you and your husband [wife] from having more children?" is worded like a motivation question, but seems to have tapped the same experience dimension as the other items. See the item analysis in the next section.

¹⁴ Data on childless couples are analyzed in a separate section later in this report.

and small families are sufficiently basic and stable aspects of personality to be discoverable after a variety of experiences throughout twelve to fourteen years of married life. Formulated as a distinct and separate psychological factor, a "feeling that children interfere with personal freedom" is neither sufficiently basic nor stable to meet this requirement. Such "feeling . . ." makes sense as a common but variable expression of a value hierarchy in which family building has low rank. Such a conception, however, would have called for a different series of questions. Second, the questions were so phrased that, whatever were the attitudes which conditioned fertility behavior in the twelve to fourteen preceding years, responses of couples with children tended to be made primarily in terms of their actual experience with child care.

THE FEELING THAT CHILDREN INTERFERE WITH PERSONAL
FREEDOM AS THE PRODUCT OF EXPERIENCE IN FAMILY BUILDING
AMONG COUPLES WITH CHILDREN

If the data are inadequate to test a hypothesis about motivation, they can be explored usefully in terms of variations in feelings of restriction among people whose experiences in family building have differed. Three main variables are used as indices of experiences in family building:

1. Success in fertility planning is taken as a specific kind of control over life conditions; lack of success in fertility planning is taken to indicate some degree of defeat and disappointment.¹⁵
2. Number of living children is taken as a rough measure of the burdens of child care, including the actual restriction of personal freedom.
3. The summary index of socio-economic status is used as a refinement for both of the above variables: it serves as a general index of control over life conditions, both past and present, and therefore reflects general conditions for modifying the burdens of child care. In addition, its strong relationship to fertility

¹⁵ This classification is not completely satisfactory since some "quasi-planned" families were quite successful in fertility control once they began to practice contraception, and in some of the "excess fertility" families only one spouse thought there were too many children.

planning and number of children and to factors hypothesized as affecting them¹⁶ makes its control desirable.

In order to have large enough numbers of cases to examine the effect of each factor while holding the other two constant, almost the entire analysis is presented with dichotomized¹⁷ or in the case of family size, trichotomized (1, 2, and 3 or more children) variables.¹⁸ The specific hypotheses proposed are:

A. The proportions of wives, husbands, and couples expressing a strong feeling that children interfere with personal freedom are higher; and

B. The proportions of wives, husbands, and couples expressing a desire for much more time for various activities are higher:

1. among those unsuccessful than among those successful in fertility planning;
2. among those with larger than among those with smaller families;
3. among those in the lower socio-economic group than among those in the higher group.

¹⁶ See Westoff, C. F., and Kiser, C. V.: Social and Psychological Factors Affecting Fertility. xxi. An Empirical Re-Examination and Intercorrelation of Selected Hypothesis Factors. The Milbank Memorial Fund *Quarterly*, October, 1953, xxxi, No. 4, pp. 421-435 (Reprint pp. 953-967). See also Borgatta, Edgar F., and Westoff, Charles F.: Social and Psychological Factors Affecting Fertility. xxv. The Prediction of Total Fertility. The Milbank Memorial Fund *Quarterly*, October, 1954, xxxii, No. 4, pp. 383-419 (Reprint pp. 1087-1123); xxvi. The Prediction of Planned Fertility. The Milbank Memorial Fund *Quarterly*, January, 1955, xxxiii, No. 1, pp. 50-62. (Reprint pp. 1125-1137).

¹⁷ For dichotomy points for attitude indices, see Table 2. "Number and spacing planned" and "number planned" families are classed as successful in fertility planning, "quasi-planned" and "excess fertility" as unsuccessful. (Some of these "unsuccessful planners" did not practice contraception until after they had the number of children they desired, and were then successful in preventing further pregnancies.) High SES corresponds to 0-3, low SES to 4-6 on the summary index of socio-economic status. Note that "high" and "low" are only relative; the range of socio-economic status is severely restricted in this sample. For details of the construction of the SES index, see Kiser, C. V., and Whelpton, P. K.: Social and Psychological Factors Affecting Fertility. ix. Fertility Planning and Fertility by Socio-Economic Status. The Milbank Memorial Fund *Quarterly*, April, 1949, xxvii, No. 2.

¹⁸ Analysis with dichotomized variables is appropriate only if the underlying relationships are assumed to be rectilinear. Curvilinear relationships may escape detection entirely or be very attenuated. With only rough indices for success in fertility planning and for attitudes, an absolutely restricted range of socio-economic status, too few cases in part of the ranges for attitudes and number of children, and a relatively small sample, the assumption of rectilinear relationships is not a very serious additional handicap.

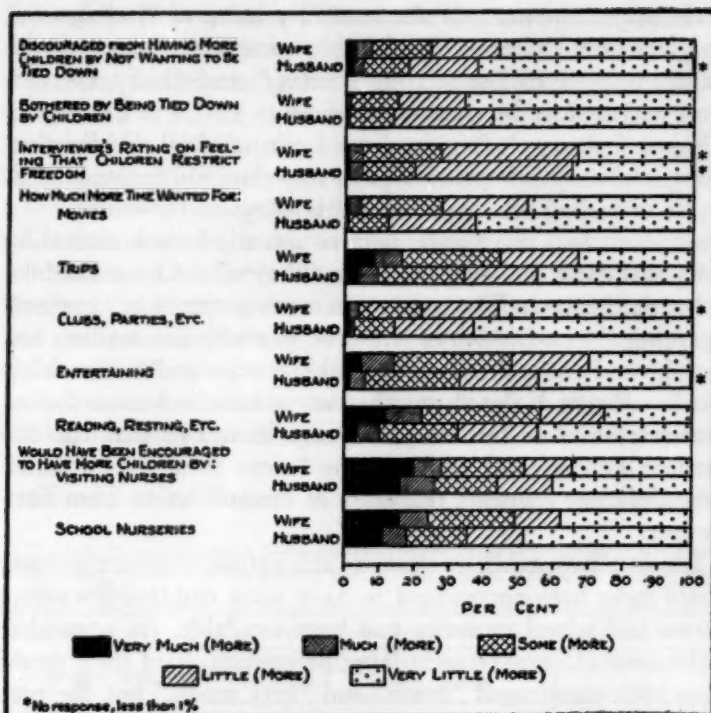


Fig. 1. Percentage distributions of responses of 1,309 wives and husbands with children to questions relating to "the feeling that children interfere with personal freedom."

In this section data on couples with children are considered. First, the total distributions of item responses are examined. Then success in planning fertility, number of children, and socio-economic status are successively examined for their effects on responses to particular items and on the summary indices of attitudes. Finally, additional factors which might have influenced the attitudes of wives are examined.

Total Distributions of Responses to Attitude Items. Figure 1 shows the percentage distributions of responses by wives and husbands with children to the ten questions relating to the "feeling that children interfere with personal freedom." The

three component items of the summary index of "feeling . . ." are given first, followed by the five component items of the summary index of "more time wanted," and finally the two items not used in the summary indices.

Figure 1 shows the highly skewed nature of all the distributions; relatively few persons gave responses indicating a high degree of feeling of restriction. This is especially true for the items about how much parents have actually been bothered by being tied down and how much time they would have liked for clubs, parties, etc. The greatest dissatisfaction was expressed regarding the restriction of the time available for reading and resting, and somewhat less for taking trips and entertaining friends. Figure 1 also shows that wives indicated more feeling of restriction than husbands on every item, and that the differences were greater on the same "more time" items which drew the more frequent responses of dissatisfaction from both spouses.

The last two items, concerning the extent to which parents would have been encouraged to have more children if visiting nurses and school nurseries had been available, are somewhat ambiguous. Comparatively large proportions said they would have been encouraged "much" and "very much," but the proportions responding in the middle categories "some" or "little" are comparatively small. *A priori* it is not clear whether the response which manifests a feeling of restriction by children ought to be "encouraged very much" (since the burden would be lightened by such facilities) or "very little" (since the day-to-day burden of child care would not be lightened very greatly by these facilities alone). The former was chosen because the relationship to success in fertility planning and size of family is then in the same direction as that of the other items, though not so strong.

Turning to the experience variables, Table 4 shows the degree of association between the attitude items and success in planning fertility, number of living children, and socio-economic status among all couples with children. None of the re-

relationships is very close. The desire for more time for clubs, parties, etc. is not related significantly to any of the experience variables, and encouragement by the availability of visiting nurses and of school nurseries is scarcely related to the fertility variables. Of the items composing the summary index of "feeling . . .," the only one significantly related to family size is the one about being bothered by being tied down, but all are related to socio-economic status. From the direction of the relationship (see Table 20 in the Appendix), it appears that "feeling . . ." in this general sense is associated with high status and unsuccessful planning rather than with the actual work of child care. On the other hand, all except one of the activities for which more time was desired are related to number of live births, and only one is significantly related to socio-economic status.

The Effect of Success in Fertility Planning on Attitudes.

Table 4. Degree of association between attitude items and success in fertility planning, number of live births, and socio-economic status, for all couples with children.¹

ATTITUDE ITEM	COEFFICIENT OF CONTINGENCY (DEGREES OF FREEDOM) ²					
	Success in Planning Fertility		Number of Live Births ³		Socio-Economic Status	
	Wives	Husbands	Wives	Husbands	Wives	Husbands
Discouraged . . . Avoid						
Being Tied Down	.150(9)	.168(9)	—	—	.165(12)	.183(12)
Bothered By Being Tied Down	.161(6)	.197(6)	.174(6)	.221(6)	.156(8)	—
Interviewer Rating	.177(9)	.181(9)	—	—	.169(12)	.165(12)
Would Have Liked More Time For:						
Movies	.190(9)	.148(6)	.218(9)	.206(6)	—	—
Trips	.217(12)	.182(12)	.201(12)	.179(12)	.212(16)	—
Clubs . . . Parties, etc.	—	—	—	—	—	—
Entertaining	.198(12)	.162(9)	.186(12)	.148(9)	—	—
Reading . . . etc.	.194(12)	.179(12)	.214(12)	.184(12)	—	—
Would Have Been Encouraged By:						
Visiting Nurses	—	—	.187(12)	—	.268(16)	.275(16)
School Nurseries	—	.178(12)	—	—	.212(16)	.250(16)

¹ N = 1,301-1,309. Some persons failed to respond to some items.

² See Table 1, footnote 2.

³ These coefficients were computed prior to the decision to use number of living children as the measure of family size. Since there were few post-natal deaths, there seems to be no reason to believe that the coefficients would be appreciably different if number of living children had been used.

Table 5. Effect of success in fertility planning on responses by wives and husbands with children, number of living children and socio-economic status held constant. Incidence of responses showing feeling of restriction expressed as index numbers.¹

Description of Sub-Group	SOME, MUCH, OR VERY MUCH MORE TIME WASTED FOR:															
	DISCOURAGED . . . AVOID BEING TIED DOWN				BOTHERED BY BEING TIED DOWN				INTERVIEWER RATING				MOVIES			
	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands
Proportion of All Wives or Husbands Giving Responses Showing Feeling of Restriction																
Index Number For All Wives and Husbands	.242	.179	.144	.138	.275	.198	.278	.125	.446	.342	.222	.142	.479	.330	.564	.326
1 Child—High SES	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Successful Planners	75	83	115	48	84	99	71	40	76	53	67	23*	72	60	69	71
Unsuccessful Planners	95	96	85	89	89	82	55	92	71	85	73	130	77	86	79	99
1 Child—Low SES	58	39	61	25	70	80	95	0*	106	46†	71	87	103†	75	87	48
Successful Planners	42	64	24	49	62	104	49	109	79	103	31	80	55	107	71	94
Unsuccessful Planners	134	80	131	47	104	92	86	62	90	95	145	119	105	98	112	78
2 Children—High SES	160	108	67	70	150	114	120	78	105	113	137	59	108	95	101	89
Successful Planners	41*	55	34	62	47*	52	67†	39	75†	87	83	52	75	67	94	64*
Unsuccessful Planners	104	103	106	115	113	104	129	85	114	95	99	103	105	104	95	136
3 or More Children—High SES	124	126	191	181	55†	63†	90*	200	95†	154	90	123	120	129	111	100
Successful Planners	105	141	212	221	113	136	163	169	134	135	137	141	134	140	124	129
Unsuccessful Planners	66	112	83	116	102	81	101	160	152	129	54	254*	92	133	121	160
3 or More Children—Low SES	101	142	101	171	113	119	127	185	123	123	110	130	127	122	114	126
Successful Planners																
Unsuccessful Planners																

* $P(X) < .05$, i.e. difference significant at five per cent level.

† $.05 < P(X) < .10$, i.e. difference approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.

Responses taken as showing a feeling of restriction were "some," "much," and "very much . . . bothered," "more time," etc. The proportions of all wives with children or of all husbands with children who gave such responses is taken as the base (i.e. as equal to 100) for each column. The proportion who responded similarly in each sub-group is shown as a percentage of this base proportion. The numbers of cases in each sub-group and the proportion who gave responses showing a feeling of restriction are given in the Appendix, Table 20.

Table 4 shows that success in fertility planning is significantly associated with all except one of the items composing the summary indices. Table 5 shows the effect of fertility planning success on the incidence of item responses which indicate a feeling of restriction, when both number of children and socio-economic status are held constant.¹⁹

A quick survey of Table 5 shows that few differences are significant, but in sixty-nine cases, or almost three-fourths of the ninety-six comparisons, responses showing a feeling of restriction occurred less frequently among successful fertility planners than among unsuccessful planners. Husbands seem slightly more likely than wives to conform to the hypothesized pattern. On the whole, exceptions to the pattern are well scattered and represent small differences, so that they may be regarded as chance variations. One set of exceptions, however, has a definite pattern. Among wives in the low socio-economic group with one child, successful planners have the higher incidence of responses showing a feeling of restriction on every item. Another five instances of such reversal occur among wives in the high socio-economic group and among husbands with one child. Thus half of the total exceptions occur among one child families.

This reversal for one child families may be less destructive of the hypothesis than appears at first glance, for it may be due in important degree to self-selection and the manner of classifying couples as successful or unsuccessful fertility planners. All successful planners with one child deliberately planned at least one pregnancy and most of them deliberately chose not to have a second.²⁰ It seems reasonable, therefore, to suppose that this group includes a rather high concentration of those

¹⁹ The items about encouragement by the availability of visiting nurses and school nurseries have been omitted because of their lack of correlation with fertility behavior.

²⁰ Planning categories were based on pregnancies. A very few of the "number planned" couples with one child had an unplanned first pregnancy ending in wastage, followed by a planned pregnancy and live birth. A very few other successful planners had more than one pregnancy but because of pregnancy wastage or death had only one child. Some wives with one child said they intended to have another child later.

whose experience with the first child was not what they had anticipated—perhaps because their freedom was more restricted than they had expected—and who were thus influenced against having more children. Unsuccessful planners with one child, on the other hand, include not only those cases in which the pregnancy occurred in spite of contraceptive measures but those in which contraception practice had not yet begun. Only about one-fourth of them (the excess fertility couples) claimed not to have wanted a live birth once the pregnancy was recognized, and all of them were successful in limiting the family to one child. It seems reasonable, therefore, that the “unsuccessful” planners with one child, being actually rather successful and including few who were disappointed in their expectations of parental freedom, would have a rather low incidence of responses showing a feeling of restriction. Actually, both successful and unsuccessful planners with one child have a lower than average incidence of such responses (index below 100) on most items.

The summary indices of “feeling . . .” and “more time wanted,” as would be expected from the consistency of item responses, show the same pattern.²¹ When number of living children and socio-economic status are held constant, few of the differences between successful and unsuccessful fertility planners are statistically significant, but the direction of the relationship is clear. (See Table 6.)

The incidence of strong “feeling . . .” is lower among successful fertility planners than among unsuccessful planners, with one minor exception, in both high and low socio-economic groups with two or more children. Reversal of the relationship among one child families in both socio-economic groups may be attributed to self-selection by disappointment of expectations among successful planners with only one child, and to the classification as unsuccessful planners of couples who first began their contraceptive practice after having the one child they wanted. On

²¹ The statistical significance and direction of the total relationship were given in footnote 9 and Table 3 in connection with the hypothesis about motivation.

balance, therefore, the evidence appears to support hypothesis A(1).

The proportions of wives, husbands, and couples expressing a desire for "more time" for various activities are higher for unsuccessful than for successful planners, with two exceptions for wives (both high and low SES groups with one child) and two exceptions for husbands (high SES with two children and low SES with three or more children). For none of these exceptions are the differences statistically significant; two of them belong to the one child pattern noted above. With four-

Table 6. Effect of success in fertility planning on incidence of attitudes of couples with children, number of living children and socio-economic status held constant. Incidence of attitudes expressed in index numbers.¹

DESCRIPTION OF SUB-GROUP	HAVE STRONG "FEELING . . ."			WANT MUCH "MORE TIME"		
	Wives	Husbands	Couples	Wives	Husbands	Couples
Proportion of All Couples With Strong "Feeling . . ."	.382	.328	.184			
Wanting Much "More Time"				.531	.336	.214
Index Number For All Couples	100	100	100	100	100	100
<i>1 Child—High SES</i>						
Successful Planners	91	70	85	81	47	43
Unsuccessful Planners	82	66	50	77	80	54
<i>1 Child—Low SES</i>						
Successful Planners	74	70	48	92	52	41
Unsuccessful Planners	51	69	37	64	98	53
<i>2 Children—High SES</i>						
Successful Planners	104†	97	102†	94	101	91
Unsuccessful Planners	147	104	175	115	90	112
<i>2 Children—Low SES</i>						
Successful Planners	39*	56*	27*	77	70†	85
Unsuccessful Planners	118	127	115	106	126	124
<i>3 or More Children—High SES</i>						
Successful Planners	105	114	95	104†	119	128
Unsuccessful Planners	102	138	137	135	144	167
<i>3 or More Children—Low SES</i>						
Successful Planners	94	110	65	113	155	131
Unsuccessful Planners	116	134	128	122	127	143

* $P(X^2) < .05$, i.e. difference significant at five per cent level.

† $.05 < P(X^2) < .10$, i.e. difference approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.

¹ An attitude of strong "feeling . . ." or of wanting much "more time" is present for wife or husband if the summary index was coded 1-6, for the couples if the summary index was coded 1-6 for both wife and husband. The proportion of all wives with children, of all husbands with children, or of all couples with children who have the attitude is taken as the base (i.e. as equal to 100) for each column. The proportion which has the attitude in each sub-group is shown as a percentage of this base proportion. The number of cases and the proportion with the attitude in each sub-group are given in the Appendix, Table 19.

Table 7. Effect of number of living children on responses by wives and husbands with children, success in fertility planning and socio-economic status held constant. Incidence of responses showing "feeling . . ." expressed as index numbers.¹

Description of Sub-Group	Some, Much, or Very Much More Time Wanted For:															
	Discouraged . . . Avoid Being Tied Down		Bothered By Being Tied Down		Interviewer Rating		Movies		Trips		Clubs, Etc.		Entertaining		Reading, Etc.	
	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands
Proportion of All Wives or Husbands Giving Responses Showing "Feeling . . ."																
Index Number For All Wives and Husbands	.242	.179	.144	.138	.275	.198	.278	.125	.446	.342	.222	.142	.479	.330	.564	.326
Successful Planners—																
High SES																
1 Child	75	83	115	48	84	99	71	40	76	53*	67*	23*	72†	60†	69*	71
2 Children	134	80	131	47	104	92	86	62	90	95	145	119	105	98	112	78
3 or More Children	124	126	191	181	55	63	90	200	95	154	90	123	120	129	111	100
Successful Planners—																
Low SES																
1 Child	58	39	61	25	70	80	95	0	106†	46†	71	87	103	75	87	48*
2 Children	41	55	54	62	47	52	67	39	75	87	83	52	75	67	94	64
3 or More Children	66	112	83	116	102	81	101	160	152	129	54	254	92	133	121	160
Unsuccessful Planners—																
High SES																
1 Child	95†	96	85*	89*	89†	82	55*	92	71*	85	73†	130	77*	86†	79*	99
2 Children	160	108	67	70	150	114	120	78	105	113	137	59	108	95	101	89
3 or More Children	105	141	212	221	113	136	163	169	134	135	137	141	134	140	124	129
Unsuccessful Planners—																
Low SES																
1 Child	42†	64†	24†	49*	62	104	49*	109*	79†	103	31*	80	55*	107	71*	94
2 Children	104	103	106	115	113	104	129	85	114	95	99	103	105	104	95	136
3 or More Children	101	142	101	171	113	119	127	185	123	123	110	130	127	122	114	126

* $P(X^2) < .05$, i.e., relationship between attitude and number of living children is significant at the five per cent level.

† $.05 < P(X^2) < .10$, i.e., the relationship approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.

¹ See footnote 1 to Table 5.

teen of the eighteen possible comparisons being in the expected direction, hypothesis B(1) may also be tentatively accepted.

The Effect of Number of Children on Attitudes. Among all couples with children the relationships between number of live births and item responses are statistically significant for four of the five "more time wanted" items, but for only one ("bothered by being tied down") of the three items composing the "feeling . . ." index (see Table 4). However, both summary indices show significant association with number of living children.²² The relationship is also significant²³ among unsuccessful planners considered separately, but not among successful planners.

Table 7 shows the effect of number of children on item responses when success in fertility planning and socio-economic status are held constant. Again a clear pattern emerges in general support of the hypothesis that the feeling of restriction increases with number of children. In only four of sixty-four comparisons do wives or husbands with one child have a higher incidence of responses showing a feeling of restriction than those with three or more children. Two of the exceptions are for interviewer ratings of successful planners in the high socio-economic group and may represent interviewer bias; two are for "more time wanted" for clubs and for entertaining by wives among successful planners in the low socio-economic group. In an additional twenty-seven instances the wives or husbands with two children are out of line; in nine instances they have a higher incidence of responses showing a feeling of restriction than spouses with three or more children, and in eighteen instances a lower incidence than spouses with only one child. The last pattern is especially common among successful planners in the low socio-economic group and may be tentatively attrib-

²² $.01 < P(X^2) < .02$ for wives on index of "feeling . . ." $P(X^2) < .001$ for husbands on index of "feeling . . ." and for both wives and husbands on index of "more time wanted." C varies from .176 to .238, all based on 12 degrees of freedom. With attitudes dichotomized and number of children trichotomized, $P(X^2) < .01$ for wives on "feeling . . ." and $P(X^2) < .001$ for all other groups, including couples.

²³ $P(X^2) < .001$ for both indices.

uted to a concentration among one child families of those disappointed in their experience with the first child. These exceptions also fit with evidence scattered throughout reports on the Study that parents with two children tend to be better adjusted, on the whole, than those with fewer or with more children.

Table 8 shows the effect of number of living children on the summary indices when planning success and socio-economic status are held constant. Again the general pattern supports the hypotheses: The more children, the greater the incidence of a feeling of restriction.

For the incidence of much "more time wanted" the pattern is consistent and strong. Even among successful planners the one-child families, with one minor exception, felt least restricted

Table 8. Effect of number of living children on incidence of attitudes of couples with children, success in fertility planning and socio-economic status held constant. Incidence of attitudes expressed in index numbers.¹

DESCRIPTION OF SUB-GROUP	HAVE STRONG "FEELING . . ."			WANT MUCH "MORE TIME"		
	Wives	Husbands	Couples	Wives	Husbands	Couples
Proportion of All Couples With Strong "Feeling . . ."	.382	.328	.184			
Wanting Much "More Time"				.531	.336	.214
Index Number For All Couples	100	100	100	100	100	100
<i>Successful Planners—High SES</i>						
1 Child	91	70	85	81	47	43
2 Children	104	97	102	94	101	91
3 or More Children	105	114	95	104	119	128
<i>Successful Planners—Low SES</i>						
1 Child	74	70	48	92	52†	41
2 Children	39	56	27	77	70	85
3 or More Children	94	110	65	113	155	131
<i>Unsuccessful Planners—High SES</i>						
1 Child	82*	66*	50*	77*	80*	54*
2 Children	147	104	175	115	90	112
3 or More Children	102	138	137	135	144	167
<i>Unsuccessful Planners—Low SES</i>						
1 Child	51*	69*	37*	64*	98	53*
2 Children	118	127	115	106	126	124
3 or More Children	116	134	128	122	127	143

* $P(X^2) < .05$, i.e. relationship between attitude and number of living children is significant at the five per cent level.

† $.05 < P(X^2) < .10$, i.e. the relationship approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.

¹ See footnote to Table 6.

and the families with three or more children most restricted.

However, for the incidence of the more general "feeling . . .," the pattern is not quite so consistent. Among successful planners in the low socio-economic group, the two-child families have the lowest incidences of strong "feeling. . ." If the reasoning offered earlier about self-selection among successful planners is correct, this "exception" may be explained. Among the successful planners with one child there are a number of persons whose actual experience of parenthood disappointed their expectations and who therefore stopped with one child, while those with two children are self-selected from persons with a happier correspondence between anticipated and actual experiences. Why this should be true of successful planners in the lower socio-economic group but not of those in the higher group is puzzling, but may be due to selective factors operating on the SES classification. For two prominent exceptions to the hypothesized pattern among unsuccessful planners—the high incidence of "feeling . . ." among wives and couples with two children in the high socio-economic group—no explanation presents itself.

It should be noted that all the groups with only one child have lower than average incidence of strong "feeling . . ." and of much "more time wanted," and that the highest or second highest incidence always occurs in families with three or more children. The index for families with three or more children is always higher than for families with one child, the excess varying from 10 to 113 percentage points.

That the feeling of being restricted in certain activities varies directly with number of children (hypothesis B(2)) can therefore be accepted as reasonably certain; the evidence that number of children influences the more general feeling of interference with personal freedom (hypothesis A(2)) is less consistent, but tends to support the hypothesis.

The Effect of Socio-Economic Status on Attitudes. As was noted earlier in Table 4, socio-economic status is significantly related to responses to the two general items and to interviewer

Table 9. Effect of socio-economic status on responses by wives and husbands with children, success in fertility planning and number of living children held constant. Incidence of responses showing "feeling . . ." expressed as index numbers.¹

Description of Sub-Group	Discouraged . . . Avoid Being Tied Down		Bothered By Being Tied Down		Interviewer Rating		Movies		Trips		Clubs, Etc.		Entertaining		Reading, Etc.	
	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands
Proportion of All Wives or Husbands Giving Responses Showing "Feeling . . ."	.242	.179	.144	.138	.275	.198	.278	.125	.446	.342	.222	.142	.479	.330	.564	.326
Index Number For All Wives and Husbands	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Successful Planners																
—1 Child																
High SES	75	83	115	48	84	99	71	40	76	53	67	23	72	60	69	71
Low SES	58	39	61	25	70	80	95	0	106	46	71	87	103	75	87	48
Successful Planners																
—2 Children																
High SES	134*	80	131†	47	104	92	86	62	90	95	145*	119	105	98	112	78
Low SES	41	55	34	62	47	52	67	39	75	87	83	52	75	67	94	64
Successful Planners																
—3 or More Children																
High SES	124	126	191	181	55	63	90	200	95†	154	90	123	120	129	111	100
Low SES	66	112	83	116	102	81	101	160	152	129	54	254	92	133	121	160
Unsuccessful Planners																
—1 Child																
High SES	95†	96	85	89	89	82	55	92	71	85	73	130	77	86	79	99
Low SES	42	64	24	49	62	104	49	109	79	103	31	80	55	107	71	94
Unsuccessful Planners																
—2 Children																
High SES	160†	108	67	70	150	114	120	78	105	115	137	59	108	95	101	89†
Low SES	104	103	106	115	113	104	129	85	114	95	99	103	105	104	95	136
Unsuccessful Planners																
—3 or More Children																
High SES	105	141	212*	221	115	136	163	169	134	135	137	141	134	140	124	129
Low SES	101	142	101	171	113	119	127	185	123	123	110	130	127	122	114	126

* $P(X) < .05$, i.e. difference significant at five per cent level.
† $1.05 < P(X) < .10$, i.e. difference approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.
See footnote to Table 5.

ratings, but not to the "more time wanted" items. Table 9, which shows the direction of the relationship when planning success and number of children are constant, offers no support for the hypothesis that a feeling of restriction is associated with low socio-economic status. The differences between the two socio-economic groups in incidence of responses showing a feeling of restriction are not significant.²⁴ Moreover, only one-third of them are in the direction hypothesized.

When the items are combined into summary indices, the findings are somewhat different, but offer no more support for the hypothesis. The index of "feeling . . ." is not significantly associated with socio-economic status among all couples with children.²⁵ When planning status and number of living children are held constant (*see* Table 10) the incidence of strong "feeling . . ." seems to be slightly greater in the high than in the low socio-economic group. This reversal of the predicted relationship is quite consistent among successful planners. Six of the nine comparisons among unsuccessful planners also contradict the hypothesis.

The index of "more time wanted" is significantly associated with socio-economic status when each is treated as a variable,²⁶ but when each is reduced to a dichotomy, the relationship becomes non-significant.²⁷ As can be seen in Table 10, no very evident pattern of association shows up when planning status and number of living children are held constant. Eight of the eighteen comparisons support and ten contradict hypothesis B(3), but none of the differences is significant at the five per cent level.

Hypotheses A(3) and B(3) therefore must be rejected. Such slight relationship as appears between indices of attitudes

²⁴ Only eight of ninety-six comparisons are significantly different at the ten per cent level.

²⁵ $.1 < P(X^2) < .2$ for wives, $.2 < P(X^2) < .3$ for husbands, 16 degrees of freedom respectively. Or, using dichotomized variables, $.1 < P(X^2) < .3$ with 1 degree of freedom respectively for wives, husbands, and couples.

²⁶ $.01 < P(X^2) < .02$, with 16 degrees of freedom, for wives and for husbands respectively.

²⁷ *See* footnote 18.

and socio-economic status is the reverse of that hypothesized. It may be that restriction of the range of socio-economic status in this sample is responsible for the relative lack of association, but this seems unlikely in view of the association between SES and the fertility variables. In any event, it is clear that for this sample either the summary index of socio-economic status is not a good measure of the relative burden of child care and degree of control over life conditions, or these latter variables are not related to the attitudes in question. The first alternative seems more reasonable, i.e. that socio-economic status as measured here is associated more closely with differences in

Table 10. Effect of socio-economic status on incidence of attitudes of couples with children, success in fertility planning and number of living children held constant. Incidence of attitudes expressed in index numbers.¹

DESCRIPTION OF SUB-GROUP	HAVE STRONG "FEELING . . ."			WANT MUCH "MORE TIME"		
	Wives	Husbands	Couples	Wives	Husbands	Couples
Proportion of All Couples With Strong "Feeling . . ."	.382	.328	.184			
Wanting Much "More Time"				.531	.336	.214
Index Number For All Couples	100	100	100	100	100	100
<i>Successful Planners—1 Child</i>						
High SES	91	70	85	81	47	43
Low SES	74	70	48	92	52	41
<i>Successful Planners—2 Children</i>						
High SES	104*	97	102*	94	101	91
Low SES	39	56	27	77	70	85
<i>Successful Planners—3 or More Children</i>						
High SES	105	114	95	104	119	128
Low SES	94	110	65	113	155	131
<i>Unsuccessful Planners—1 Child</i>						
High SES	82	66	50	77	80	54
Low SES	51	69	37	64	98	53
<i>Unsuccessful Planners—2 Children</i>						
High SES	147	104	175†	115	90†	112
Low SES	118	127	115	106	126	124
<i>Unsuccessful Planners—3 or More Children</i>						
High SES	102	138	137	135	144	167
Low SES	116	134	128	122	127	143

* $P(X^2) < .05$, i.e. difference significant at five per cent level.

† $.05 < P(X^2) < .10$, i.e. difference approaches significance. These are reported because reduction of chi-square proportionate to inflation of the sample makes P values only approximate.

¹ See footnote to Table 6.

personal value systems and ways of life than with the degree of difficulty experienced in raising children and the attitudes deriving from such experience. According to this interpretation, the personal values associated with high socio-economic status tend to produce a feeling of restriction among couples with children which partially negates the effect of their fertility planning success and small family size in minimizing such feeling of restriction. Phrased somewhat differently, socio-economic status appears to reflect motivational factors more closely than it does child-rearing experience.

Additional Comparisons. Before proceeding to a consideration of certain other experience factors which may condition attitudes among wives, a few additional comparisons may be noted.

In the first place, the incidence of strong "feeling . . ." on the summary index is somewhat higher among all wives (38.2 per cent) than among all husbands (32.8 per cent)²⁸, and the incidence of much "more time wanted" is very much higher among all wives (53.1 per cent) than among all husbands (33.6 per cent). This is what would be expected from the distributions of responses to component items (*see* Figure 1) and, since wives have primary responsibility for child care, from the general hypothesis that these attitudes are the product of experience. When the comparisons are made within groups specific by planning status, number of children, and socio-economic status (*see* Table 19 in the Appendix for the proportions), it appears that the incidence of strong "feeling . . ." among wives exceeds that among husbands mainly in the high socio-economic groups, especially among the unsuccessful planners with one or two children.²⁹ The higher incidence of desire for much "more time" among wives than among husbands is common to all sub-groups.³⁰

²⁸ The difference is significant at the one per cent level.

²⁹ However, the difference is statistically significant only among unsuccessful planners with two children in the high socio-economic group.

³⁰ But the difference is not significant at the five per cent level among successful planners with three or more children, probably due to the small numbers of cases, and among three of the six groups of unsuccessful planners.

Examination of Tables 6 and 8 with a view to comparing strength and consistency of the relationships indicates a tendency for the relationships to be relatively strongest (the range of index numbers is greatest) and most consistent for couples, but the differences are not conspicuous. The relationship of attitudes to number of children is stronger and more consistent for husbands than for wives.

With regard to the discriminating power of the different questionnaire items, it can be seen from Tables 5, 7, and 9 that great variation between sub-groups in the relative incidence of responses showing a feeling of restriction occurs on the item "bothered by being tied down" for both wives and husbands, and for husbands on the items "more time wanted" for movies and for clubs, parties, etc. On each of these items, index numbers for incidence of responses showing a feeling of restriction range from 25 or less to 200 or more. They are the items on which the incidence of such responses among all wives and husbands is low. Small variations between sub-groups in the relative incidence of responses showing a feeling of restriction occur for wives on the items "more time wanted" for reading, resting,

Table 11. Association between summary indices of "feeling . . ." and "more time wanted" among couples with children.

DESCRIPTION OF SUB-GROUP	NUMBER OF CASES ¹	COEFFICIENT OF CONTINGENCY (DEGREES OF FREEDOM) ²		
		Wives	Husbands	Couples
<i>Successful Planners With:</i>				
1 Child	178	—	—	—
2 Children	235	—	.344(1)	.305(4)*
3 or More Children	65	.296(1)	.424(1)	.3
<i>Unsuccessful Planners With:</i>				
1 Child	218	—	—	.363(3)
2 Children	306	.301(1)	.352(1)	.367(4)
3 or More Children	307	.250(1)	.228(1)	.272(4)

* $.02 < P(X^2) < .05$. All other $P(X^2) < .01$; in most cases $P(X^2) < .001$.

¹ Reduction factors used to allow for inflation of sample: .47 for families with one child; .44 for families with two children; .91 for families with three or more children.

² See Table 1, footnote 2.

³ Too few cases of couples with both attitudes to test the association.

etc., for trips, and for entertaining, and for husbands on the item "more time wanted" for entertaining. On each of these items, index numbers have a range of 80 or less. They are among the items with high incidence or responses showing a feeling of restriction among all wives and husbands. In this sense of relative variation, the items with low total incidence may be considered the most discriminating. But it should be noted that they are also the items for which the distribution over the five responses is the most skewed.²¹

The degree to which the two summary indices are related to one another varies considerably (*see* Table 11), but interpretation of the variation is hazardous because of differences in the numbers of cases (and inflation ratios) and the varying upper limit of contingency coefficients. In general, however, it appears that among successful planners, especially among wives with less than three children, the indices are only slightly or not at all related to one another, whereas the relationship is closer among unsuccessful planners, especially among husbands and couples, and in the larger families. This suggests that for these latter groups the items tapped a more pervasive general attitude, while wives successful in planning very small families interpreted the items more specifically.

Other Factors of Possible Influence on the Wife's Attitudes. We have sought to establish the general hypothesis that the feeling that children interfere with personal freedom—at least such feeling as is measured by the attitude data available for this study—is the product of experience with child care and family building; i.e., difficulty and disappointment tend to foster dissatisfaction which is expressed as a feeling of restriction. So far, the data on success in fertility planning and number of children have tended to support the hypothesis. It may be tested further, however, with additional data on wives. Nine "factors" have been assembled, each with two or more degrees of "being tied down" or of "deprivation" of the wife. The nine

²¹ Since no unidimensional scale was obtained from the application of scalogram or latent structure analysis, the criteria for discriminating power of items provided by these techniques were inapplicable.

factors, with their alternatives listed from the most to the least "deprived" situation are:

1. Domestic help since marriage:
 - a. seldom or never any paid domestic help;
 - b. some help.³²
2. Pattern of family growth in the first four years after marriage, i.e. the rapidity with which the wife had her freedom curtailed by child care:
 - a. two or more live births within four years of marriage;
 - b. one live birth in this period;
 - c. no live birth in this period.
3. Marriage age and pattern of family growth, i.e. restriction of freedom at a young age plus early and/or extended child-bearing:
 - a. wife younger than 22 years at marriage, and either had two or more live births within four years of marriage, or had live births in both the first and third four year periods;
 - b. wife older than 22 years at marriage and/or had less restrictive pattern of family growth.
4. Employment after marriage due to economic pressure:
 - a. wife employed for a total of three years or more after marriage, some of it after the first four years and some of it full time work, because additional income was needed;
 - b. any other situation.
5. Combination of burdens:
 - a. early marriage and family growth plus employment after marriage through necessity (3a and 4a);
 - b. either early marriage and family growth, or employment after marriage through necessity (either 3a or 4a);
 - c. neither of these.
6. Occupation before marriage:
 - a. professional or proprietor-manager-official;
 - b. other occupation;
 - c. no occupation.

(The argument is that wives with high status work before marriage would feel more restricted and deprived by the

³² Unfortunately no information was obtained about unpaid help from friends or relatives as "baby sitters," probably one of the most important means of lessening parents' restriction.

- burdens of child care after marriage than wives who had low status work or had not worked before marriage.)
7. Occupation after marriage:
 - a. none;
 - b. all occupations except professional or proprietor-manager-official;
 - c. professional or proprietor-manager-official.(The argument is that outside work, especially high status work, reduces feelings of restriction by child care.)
 8. Participation in activities outside home since first child was born:
 - a. "seldom" or "very seldom" went to movies, on trips, or to clubs, parties, etc.;
 - b. "seldom" or "very seldom" to any two of these three activities;
 - c. "seldom" or "very seldom" to any one of three activities;
 - d. "sometimes" or more often to all three activities.
 9. Index of felt deprivation. A summary index constructed by comparing the reported frequency of participation in certain activities (going to movies, on trips, to clubs, parties, etc.) and the amount more time desired for each of them. The highest index of "felt deprivation" is that for wives who report having gone "seldom" or "very seldom" and wanting "much" or "very much" more time for all three activities. The lowest index is that for wives who report wanting little or no more time for any of the activities, regardless of reported frequency of participation. A trichotomy of the index was employed:
 - a. much;
 - b. some;
 - c. little.

Table 12 presents the data for examining the effect of each factor on the summary indices of attitudes among all wives with children. Four experience factors are significantly related to the incidence of desire for much "more time," and the direction of relationship is as expected. The proportion wanting much more time is higher among the wives who bore two or more children within four years of marriage, who married young

Table 12. Effect of selected experiences on incidence of strong "feeling . . ." and much "more time wanted" among wives with children.¹

Degree of Restriction or Deprivation From Most to Least ²	1. DOMESTIC HELP	2. PATTERN OF FAMILY GROWTH IN FIRST 4 YEARS	3. MARITAL AGE AND PAT- TERN OF FAMILY GROWTH	4. EMPLOY- MENT AFTER MARRIAGE	5. COMBINA- TION OF (3) AND (4)	6. OCCUPA- TION BEFORE MARRIAGE	7. OCCUPA- TION AFTER MARRIAGE	8. PARTICI- PATION IN ACTIVITIES	9. INDEX OF FELT DE- PRIVATION
PERCENTAGE SHOWING STRONG "FEELING . . ."									
a	36.7	37.2	40.0	31.5†	26.6	44.1	38.1	46.9†	62.5*
b	41.6	40.6	37.2	39.9	39.2	37.1	36.9	38.6	41.4
c		34.2			48.5	40.0	48.9	33.1	29.2
d								41.3	
PERCENTAGE WANTING MUCH "MORE TIME"									
a	53.5	61.5*	58.5*	53.5	65.6	58.2	54.5	79.3*	96.9*
b	52.1	49.7	50.1	53.0	54.8	52.4	51.6	62.6	84.4
c		50.5			50.3	53.0	58.5	53.6	23.9*
d								40.6	
NUMBER OF CASES IN EACH CATEGORY (BASES FOR ABOVE PERCENTAGES)									
a	900	358	463	260	64	127	454	111	221
b	399	650	846	1,049	595	982	761	262	365
c		301			650	200	94	481	723
d	10							455	
Total	1,309	1,309	1,309	1,309	1,309	1,309	1,309	1,309	1,309

* $P(X^2) < .05$.

† For dichotomy points on attitude indices see Table 2.

* For dichotomy points on attitude indices see Table 2.

¹ Most of the wives in this 24 per cent contradict the principle on which the index of felt deprivation was constructed, i.e. they claim to have gone out "often" or "very often" for one or more of the activities, but they also said they wanted "much" or "very much" more time for the same activi-
ties. The index of "felt deprivation" is essentially the same as the index of "more time wanted."

and experienced either early heavy childbearing or prolonged childbearing, or who reported having participated little in activities outside the home, than among the wives whose experiences are classified as less restrictive. Neither lack of domestic help nor employment through economic necessity appear to have such an effect, however. Insofar as the level of employment has any effect—and it appears to be very slight—wives with professional or proprietor-manager-official positions, whether before (6a) or after (7c) marriage seem to be somewhat less satisfied with their activities than wives with more routine work or with no work.

The experience factors are even less closely related to the summary index of a more general "feeling. . . ." Only one reaches the five per cent significance level. Two others approach significance, but wives employed after marriage through economic necessity have a lower incidence of "feeling . . ." than wives presumably less burdened. Perhaps employment was not really such a burden; perhaps it served to counter-balance any feeling of restriction by children. Wives reporting a high degree of participation in outside activities, as well as wives reporting a very low degree of participation, have a high incidence of "feeling. . . ." The incidence of "feeling . . ." by occupation before and after marriage follows the same pattern as the incidence of "more time wanted": professional and proprietor-manager jobs are associated with more feeling of restriction by children. Such jobs, while in some respects permitting more freedom of time and movement than routine work, in other respects require more freedom since the work cannot be so easily confined to regular working hours. Perhaps they also foster a desire to be even more completely free.⁸⁸

Factor 5, which was intended to measure the effect of com-

⁸⁸ It is such fragmentary data as these last, together with the slight tendency among successful fertility planners with few children for responses showing a feeling of restriction to be associated with high socio-economic status, that tend to support the hypothesis about motivation for fertility control. Children inevitably interfere to some extent with the pattern of life desired by some people, and when and insofar as such people realize the fact, they try to control their fertility in order to avoid interference with the way of life they desire.

bined "burdens" of early marriage, early heavy or prolonged child care, and employment through economic necessity, points up the difficulty of interpreting the data. The greater the presumed "burdens" the more likely wives are to want much "more time," but the greater the presumed "burdens," the less likely they are to manifest the more more general "feeling. . . ." Perhaps for the few wives heavily "burdened" in this sense, the "more time wanted" index represents not so much dissatisfaction with a restricted activity program as an energetic desire for a forty-eight hour day to expand the whole business of living. That the indices of "feeling . . ." and of felt deprivation tend to go together for the total sample, however, is quite evident, for wives who report having gone out little and having wanted to go out more quite consciously tend to express a strong feeling of restriction in the general index.

An attempt was made to re-examine the relationships between attitude indices for wives and success in fertility planning, number of living children, and socio-economic status with each of these additional experience factors in turn held constant. Unfortunately, the relationships are not strong enough and the numbers of cases are too small for such detailed analysis to yield reliable results. In general, holding constant these experience factors made little or no difference; therefore the effect of fertility planning success and family size on the attitudes must be independent of these experiences. In special cases, where the effects were reinforced or reversed, explanations can be proposed, but they all involve *ad hoc* interpretations of the selective nature of the particular experiences and the differential meaning of the attitude questions for wives with different experiences.

No consistent relationship could be found between the attitude indices and six different indicators of social mobility.³⁴

These additional data, therefore, offer little further support to the general hypothesis that the attitudes expressed are the product of experience with family building and child care.

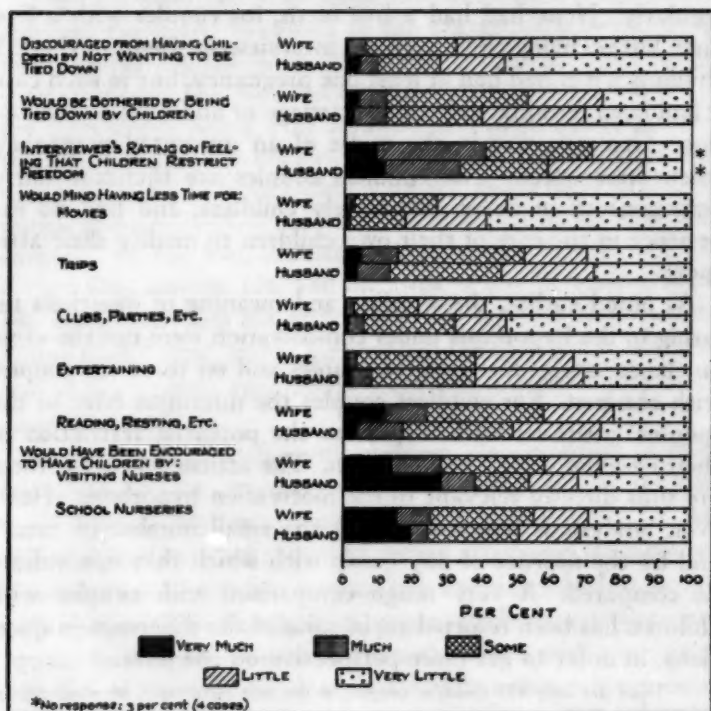
³⁴ See Riemer, *op. cit.*, Chapter VI.

Neither do they conflict with it. They do point up once more the difficulty of trying to trace any causal sequence involving fertility and attitudes toward fertility when the available data have an indefinite time reference and when such objective facts as frequencies of activities cannot be separated from subjective evaluations of them.

CHILDLESS COUPLES

So far as could be determined by non-clinical interview, all of the childless couples in this sample were fecund, i.e. they had no reason to believe themselves sterile. During all, or nearly

Fig. 2. Percentage distributions of responses of 135 childless wives and husbands to questions relating to "the feeling that children interfere with personal freedom."



SOCIO-ECONOMIC STATUS	NUMBER OF CASES	DISCOURAGED . . . AVOID BEING TIED DOWN		WOULD BE BOTHERED BY BEING TIED DOWN		INTERVIEWER RATING	
		Wives	Husbands	Wives	Husbands	Wives	Husbands
Both Groups	135	31.8	27.4	52.6	39.3	73.4	60.3
High SES	95	33.7	33.7	58.9	46.3	70.4	62.6
Low SES	40	27.5	12.5	37.5	22.5	80.0	55.0
Both Groups	135	131	153	365	285	267	304
High SES	95	139	188	409	335	256	316
Low SES	40	114	70	260	163	291	278

Table 13. Index numbers and percentages of childless couples giving responses showing a "feeling that children interfere with personal freedom" to attitude items.¹

all, of the time since marriage they had practiced contraception regularly. None had had a live birth, for couples with a live birth but no living child were not interviewed. Eight of the 135 childless wives had had at least one pregnancy, but in each case it had been terminated by a miscarriage or an intentional abortion. One wife was in the midst of an unwanted pregnancy when interviewed. The childless couples are therefore fairly homogeneous in being deliberately childless, and had no experience in the care of their own children to modify their attitudes.

As noted earlier, the wording and meaning of questions relating to the hypothesis under consideration were not the same on the schedules for childless couples and on those for couples with children. For childless couples the questions refer to the spouses' attitudes with respect to the potential restriction of their freedom if they had children. The attitude data for them are thus directly relevant to the motivation hypothesis. However, analysis is handicapped by the small number of cases³⁵ and by the absence of any group with which they can validly be compared. A very rough comparison with couples with children has been resorted to, in spite of the difference in questions, in order to get more perspective on the data.

³⁵ There are only 135 childless couples in the inflated sample, of which 92 are independent cases.

WOULD MIND SOME, MUCH, OR VERY MUCH IF LESS TIME AVAILABLE FOR:									
Movies		Trips		Clubs . . . etc.		Entertaining		Reading . . . etc.	
Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands	Wives	Husbands
PERCENTAGES									
26.7	17.8	51.9	45.2	21.5	31.9	37.8	37.8	57.8	48.9
23.2	15.8	59.0	52.6	23.2	34.7	38.9	43.1	64.1	59.0
35.0	22.5	35.0	27.5	17.5	25.0	35.0	25.0	42.5	25.0
INDEX NUMBERS ²									
96	142	116	132	97	225	79	115	102	150
83	126	132	154	104	244	81	131	114	181
126	180	79	80	79	176	73	76	75	77

¹ Responses taken as showing a "feeling that children interfere with personal freedom" were "some," "much," and "very much" discouraged, etc.

² Index numbers are computed to the base percentages given in Tables 5, 7, or 9 for responses of all couples with children. This is merely to facilitate rough comparisons; the items had different meanings for childless couples and couples with children.

Figure 2 gives the percentage distributions of responses by childless wives and husbands to the ten attitude items. It exhibits essentially the same features as did Figure 1 for couples with children. The distributions are highly skewed, except for the interviewer rating (the meaning of which is ambiguous in the case of childless couples) and the two items concerning encouragement to have children by the availability of visiting nurses and school nurseries (the ambiguity of which was noted earlier). Of the five activities, curtailment of time available for reading, resting, etc. and for trips would be minded more, the same activities for which parents with children wanted "more time." And, just as for couples with children, it is movies, and clubs, parties, etc., which seem the less attractive of the activities listed.

In contrast to couples with children, the responses of childless couples to the two general questions entering into the summary index of "feeling . . ." tend to show more concern for their personal freedom, and the interviewers attributed such concern to most of the childless couples but to relatively few couples with children. Among childless couples the husbands sometimes appear to be more concerned than the wives with possible restriction of personal freedom, but whether this concern is pri-

marily for self or spouse cannot be determined. The degree to which childless husbands claim they would have been encouraged to have children if visiting nurses and school nurseries had been available suggests concern for the wife's freedom, and perhaps an unrealistic appraisal of the effectiveness of such institutions.

To get more perspective on the attitudes of childless couples, it is helpful to assume that the questions asked them and the possible responses are roughly equivalent to those for couples with children. On this basis Table 13 gives the incidence among childless couples of responses showing a feeling of potential restriction, and also expresses them as index numbers to the base proportions of equivalent responses for all couples with children. Table 14 does the same for the summary index of the time desired for various activities.

The index numbers in Table 13 point up more strongly what a comparison between Figures 1 and 2 also shows, namely, the high degree to which interviewers judged that childless couples would resent having their freedom restricted by children; the

Table 14. Attitude of childless couples toward restriction of activities: index numbers and percentages of those who would mind very much if they had less time for various activities because of children.¹

SOCIO-ECONOMIC STATUS	NUMBER OF CASES	WIVES	HUSBANDS	COUPLES
PERCENTAGES				
Both Groups	135	48.9	45.9	32.6
High SES	95	54.7	51.6	41.1
Low SES	40	35.0	32.5	12.5
INDEX NUMBERS ²				
Both Groups	135	92	136	152
High SES	95	103	154	192
Low SES	40	66	97	58

¹ An attitude of "mind very much" is present for wife or husband if the summary index was coded 1-6, for the couple if the summary index was coded 1-6 for both wife and husband.

² Index numbers are computed to the base percentages given in Tables 6, 8, or 10 for "more time wanted" by couples with children. This is merely to facilitate comparisons; the items had different meanings for childless couples and couples with children.

high frequency with which childless couples, and especially wives, themselves judged that they would be bothered by being tied down by children; and the relatively high frequency with which childless couples admitted to being discouraged from having children by the desire to avoid being tied down. All these points favor the hypothesis that the desire to avoid restriction of personal freedom may be an important motive for remaining childless.

The index numbers in Table 13 also suggest that the reluctance among childless wives to have certain of their activities curtailed by child care is not extreme, and appears realistic when compared with the reported experience of all wives with children. Childless husbands appear to feel relatively more strongly about having their freedom restricted.

It may be noted also that, with three exceptions, childless couples in the high socio-economic group have a greater incidence of "feeling . . ." responses than those in the low group, and that some of the differences are quite considerable. This is the same pattern found for couples with children. Its recurrence here lends additional weight to the argument that the summary index of socio-economic status is an indicator of different value systems or ways of life, rather than an indicator of the economic burden of child-rearing. Possibly the childlessness of couples with low socio-economic status is more due to economic causes, and that of the couples with high socio-economic status to a preference for a less restricted way of life.

Table 14 gives the percentages of childless wives, husbands, and couples who thought they would mind restriction of their activities by children, and also expresses these percentages as index numbers to the base proportions wanting much "more time" among all couples with children. It may be observed that the percentage of childless wives who thought that they would mind having less time for certain activities is slightly smaller than the percentage of wives with children who actually wanted more time for those activities. For husbands and for couples the reverse is the case, i.e. the percentage of the child-

less who anticipated dissatisfaction is larger than the percentage of those with children who claimed to have experienced it. This difference between childless wives and husbands is particularly strong in the high socio-economic group; the wives' index is no higher than that for successful planners with three or more children and lower than that for unsuccessful planners with two children, but the husbands' index (and the index for couples) is higher than for any group with children. In the low socio-economic group the indices for childless persons are quite moderate, about the same as for unsuccessful planners with one child.

Since precise comparison of childless couples and couples with children is impossible, the main value of this rough comparison is to suggest that (a) deliberate childlessness is only moderately associated with the expectation that desired activities would be too much restricted by children, (b) the expectation is stronger at the high SES level than at the low level, and (c) it is held by husbands to a greater degree than would seem warranted by the experience of couples with children.

In summary, the data suggest that childless couples may have a more intense "feeling that children interfere with personal freedom" than do couples with children. But it is impossible to determine to what extent this attitude of childless couples motivated their childlessness over the twelve to fourteen years of marriage and to what extent it is the product of new interests and habits which did not exist as a hindrance to family building in earlier years.

SUMMARY

Hypothesis 7 of the Indianapolis Study refers to motivation for fertility control: "The stronger the feeling that children interfere with personal freedom, the higher the proportion of couples practicing contraception effectively and the smaller the planned family." It was found, however, that the data are not adequate to test this hypothesis. Among couples with children, most of the questions which were to determine the

"feeling that children interfere with personal freedom" refer explicitly to experiences since the birth of the first child.

Accordingly the alternative position was taken that among couples with children a feeling of restriction results from difficulties or hardships experienced in family building. Specific hypotheses are that the feeling of restriction—as manifested in a general index of "feeling . . ." and an index of "more time wanted" for various activities—are associated with (1) unsuccessful fertility control, (2) number of children, and (3) low socio-economic status. In general the data confirm that lack of success in fertility planning and having three or more children are associated with a feeling of restriction. The association appears to be closer when feeling of restriction is measured by the index of "more time wanted" for various activities than when measured by the index of more general "feeling. . . ." No clear association exists, however, between socio-economic status and feeling of restriction among couples with children. A slight tendency for the feeling of restriction to be associated with high status prompts the interpretation that the summary index of socio-economic status used in this analysis does not indicate economic difficulty in child-rearing so much as it indicates different value systems with respect to family building.

Additional information about domestic help, pattern of family growth, employment, and participation of wives in activities outside the home was examined for possible effects on the attitudes of wives with children. These data do not conflict with the hypothesis that a feeling of restriction by children is the product of experience in family building, but they offer little additional support. They do serve to emphasize two points: (1) It is not success in fertility planning or size of family *per se* or the objective difficulties associated with economic position which determine attitudes, but the interpretation of the experiences by the spouses. (2) If causal sequences involving fertility and attitudes toward fertility and toward personal freedom are to be unravelled, the data must have definite time reference and must distinguish more clearly be-

tween the objective events of parents' experiences and their subjective evaluations of them.

Data on deliberately childless couples offer some support for the hypothesis that the "feeling that children interfere with personal freedom" motivates fertility control and small families. But because there are so few childless couples in the sample and because the different questions asked of them make precise comparison with other groups impossible, only very limited analysis was feasible.

It may be suggested, however, that intensive study of the relationships between attitudes toward personal freedom and fertility control and planned family size may be concentrated most profitably on the attitudes of couples who have deliberately remained childless for varying periods after marriage, and on the expectations and experiences of couples directly before and after the birth of the first child.

APPENDIX

Table 15. Fertility planning status among couples with children by summary index of "feeling . . .," for wives, husbands, and couples. Percentage distributions.

FERTILITY PLANNING STATUS ¹	INDEX OF "FEELING . . ."							
	(Much) 1-3	4	5	6	7	8 (Little)		
<i>Wives²</i>								
Number of Cases	26	83	110	281	527	282		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number and Spacing								
Planned	26.9	9.6	13.6	22.4	23.7	20.9		
Number Planned	7.7	15.7	8.2	13.9	12.9	24.8		
Quasi-Planned	26.9	40.9	20.9	32.7	34.7	39.4		
Excess Fertility	38.5	33.7	57.3	31.0	28.7	14.9		
<i>Husbands²</i>								
Number of Cases	27	59	81	262	623	257		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
Number and Spacing								
Planned	0.0	11.9	22.2	20.6	20.2	28.0		
Number Planned	11.1	10.2	8.6	13.0	17.5	16.3		
Quasi-Planned	25.9	28.8	23.5	30.9	38.4	33.9		
Excess Fertility	63.0	49.1	45.7	35.5	23.9	21.8		
<i>Couples³</i>								
	4-9	10	11	12	13	14	15	16
Number of Cases	64	69	103	142	228	394	190	119
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number and Spacing								
Planned	15.6	7.2	8.7	31.0	19.3	22.3	23.7	26.9
Number Planned	7.8	4.3	16.5	10.6	12.7	18.5	21.0	16.0
Quasi-Planned	26.6	42.0	29.1	20.4	37.8	35.0	36.3	43.7
Excess Fertility	50.0	46.4	45.6	38.0	30.3	24.1	18.9	13.4
<i>Couples⁴</i>								
	Both 1-6		W. 1-6, H. 7-8		W. 7-8, H. 1-6		Both 7-8	
Number of Cases	241		259		188		621	
Total	100.0		100.0		100.0		100.0	
Number and Spacing								
Planned	19.5		17.8		17.0		24.5	
Number Planned	8.3		16.6		16.0		17.4	
Quasi-Planned	27.4		34.7		30.8		38.0	
Excess Fertility	44.8		30.9		36.2		20.1	

¹ These are the same categories used throughout the Indianapolis Fertility Study, except that all childless couples are excluded.

² Index obtained by summing, for wife and husband respectively, codes for responses to three items, multiplying by 3 and taking the first digit of the product as the index. The index is dichotomized (1-6, 7-8) to indicate presence or absence of strong "feeling . . .".

³ For couples, index obtained by summing indices of wife and husband. These data are supplied for possible comparison with other studies in the series; no further use is made of them in this study.

⁴ Index dichotomized for wife and husband separately, and then cross-tabulated. "Both 1-6" is taken to indicate strong "feeling . . ." for the couple, "both 7-8" is taken to indicate lack of such "feeling . . ." and the cases where wife and husband fall in opposite dichotomies are "mixed."

Table 16. Fertility planning status among couples with children, by summary index of "more time wanted," for wives, husbands, and couples. Percentage distributions.

FERTILITY PLANNING STATUS ¹		INDEX OF "MORE TIME WANTED"								
		(Much) 1-3	4	5	6	7	8	9 (Little)		
<i>Wives²</i>										
Number of Cases										
Total	76	100.0	98	287	234	301	141	172		
Number and Spacing Planned	9.2		21.4	21.3	22.2	16.0	28.4	100.0		
Number Planned	14.5		10.2	13.6	11.1	16.6	24.1	27.9		
Quasi-Planned	42.1		29.6	29.6	30.3	38.5	34.8	18.0		
Excess Fertility	34.2		38.8	35.5	36.3	28.9	12.8	39.6		
<i>Husbands³</i>										
Number of Cases										
Total	20		49	188	183	315	208	346		
Number and Spacing Planned	100.0		100.0	100.0	100.0	100.0	100.0	100.0		
Number Planned	15.0		4.1	11.2	23.5	20.0	26.4	26.0		
Quasi-Planned	20.0		20.4	12.2	12.6	14.0	12.5	20.5		
Excess Fertility	35.0		38.8	34.0	36.6	36.5	30.3	33.8		
<i>Couples⁴</i>										
Number of Cases										
Total	50	54	70	141	162	194	165	147	81	67
Number and Spacing Planned	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number Planned	10.0	9.3	20.0	18.4	16.9	17.3	34.0	23.8	32.1	26.9
Quasi-Planned	18.0	11.1	7.1	12.8	10.1	16.7	15.5	18.8	23.4	22.4
Excess Fertility	20.0	48.1	35.7	29.1	30.2	44.4	23.0	35.4	35.8	41.8
	52.0	31.5	37.1	39.7	36.0	22.7	24.2	25.2	8.6	9.0
<i>Couples⁴</i>										
Number of Cases										
Total	280			415		160		454		
Number and Spacing Planned	100.0			100.0		100.0		100.0		
Number Planned	17.8			21.9		11.9		25.8		
Quasi-Planned	10.4			13.8		19.4		18.5		
Excess Fertility	31.4			31.1		41.9		36.6		
	40.4			33.2		26.9		19.2		

¹ These are the same categories used throughout the Indianapolis Fertility Study, except that all childless couples are excluded.

² Index obtained by summing, for wife and husband respectively, codes for responses to five items, multiplying by 2, and taking the first digit of the product as the index. The index is dichotomized (1-6, 7-9) to indicate whether "much" or "little" more time is wanted.

³ For couples, index obtained by summing indices of wife and husband. These data are supplied for possible comparison with other studies in the series; no further use is made of them in this study.

⁴ Index dichotomized for wife and husband separately, and then cross-tabulated. "Both 1-6" is taken to indicate strong "feeling . . ." for the couple, "both 7-9" is taken to indicate lack of such "feeling . . ." and the cases where wife and husband fall in opposite dichotomies are "mixed."

Table 17. Average number of living children for couples with children, by summary index of "feeling . . ." and fertility planning status.

FERTILITY PLANNING STATUS ¹	INDEX OF "FEELING . . ."				
	(Much) 1-4	5	6	7	8 (Little)
AVERAGE NUMBER OF LIVING CHILDREN					
<i>Wives</i> ²					
Number and Spacing Planned	1.60		1.62	1.48	1.41
Number Planned	2.38		2.05	2.29	2.13
All Successful Planners	2.07	1.79	1.78	1.77	1.80
Unsuccessful Planners	2.32	2.64	2.49	2.34	2.09
<i>Husbands</i> ²					
Number and Spacing Planned	1.80		1.63	1.44	1.44
Number Planned	2.44		2.21	2.17	2.19
All Successful Planners	2.05		1.85	1.77	1.72
Unsuccessful Planners	2.67	2.57	2.60	2.23	2.16
	Both 1-6	W. 1-6 H. 7-8	W. 7-8 H. 1-6	Both 7-8	
<i>Couples</i> ³					
All Successful Planners	1.85	1.83	1.98	1.73	
Unsuccessful Planners	2.65	2.32	2.56	2.16	
NUMBER OF CASES					
	1-4	5	6	7	8
<i>Wives</i>					
Number and Spacing Planned	15	15	63	125	59
Number Planned	15	9	39	68	70
All Successful Planners	30	24	102	193	129
Unsuccessful Planners	79	86	179	334	153
<i>Husbands</i>					
Number and Spacing Planned	7	18	54	126	72
Number Planned	9	7	34	109	42
All Successful Planners	16	25	88	235	114
Unsuccessful Planners	70	56	174	388	143
	Both 1-6	W. 1-6, H. 7-8	W. 7-8, H. 1-6	Both 7-8	
<i>Couples</i>					
All Successful Planners	67	89	62	260	
Unsuccessful Planners	174	170	126	361	

¹ These are the same categories used throughout the Indianapolis Fertility Study, except that all childless couples are excluded and quasi-planned and excess fertility categories are combined.

² See footnote (2) to Table 15 for formation of index.

³ See footnote (4) to Table 15 for formation of index. Separate averages for the two categories of successful planners would have required new tabulations.

Table 18. Average number of living children for couples with children, by summary index of "more time wanted" and fertility planning status.

FERTILITY PLANNING STATUS ¹	INDEX OF "MORE TIME WANTED"					
	(Much) 1-4	5	6	7	8	9 (Little)
AVERAGE NUMBER OF LIVING CHILDREN						
<i>Wives</i> ²						
Number and Spacing Planned	1.68	1.69	1.44	1.50	1.38	1.38
Number Planned	2.05	2.33	2.38	2.24	1.97	2.16
All Successful Planners	1.84	1.94	1.76	1.88	1.65	1.68
Unsuccessful Planners	2.82	2.66	2.28	2.16	2.10	1.85
<i>Husbands</i> ³						
Number and Spacing Planned	2.23		1.58	1.32	1.60	1.41
Number Planned	2.49		2.30	2.36	2.23	1.90
All Successful Planners	2.05	2.52	1.83	1.75	1.80	1.63
Unsuccessful Planners	2.62	2.67	2.40	2.45	2.20	2.01
	Both 1-6	W. 1-6, H. 7-9		W. 7-9, H. 1-6		Both 7-9
	2.09	1.73		2.00		1.69
	2.74	2.45		2.23		2.00
NUMBER OF CASES						
	1-4	5	6	7	8	9
<i>Wives</i>						
Number and Spacing Planned	28	61	52	48	40	48
Number Planned	21	39	26	50	34	31
All Successful Planners	49	100	78	98	74	79
Unsuccessful Planners	125	187	156	203	67	93
<i>Husbands</i>						
Number and Spacing Planned	5	21	43	63	55	90
Number Planned	14	23	23	44	26	71
All Successful Planners	19	44	66	107	81	161
Unsuccessful Planners	50	144	117	208	127	185
	Both 1-6	W. 1-6, H. 7-9		W. 7-9, H. 1-6		Both 7-9
	79	148		50		201
	201	267		110		253
<i>Couples</i>						
All Successful Planners						
Unsuccessful Planners						

¹ These are the same categories used throughout the Indianapolis Fertility Study, except that all childless couples are excluded and quasi-planned and excess fertility categories are combined.

² See footnote (2) to Table 16 for formation of index.

³ See footnote (4) to Table 16 for formation of index. Separate averages for the two categories of successful planners would have required new tabulations.

Table 19. Incidence of attitudes among couples with children, by success in planning fertility, number of living children, and socio-economic status.¹

DESCRIPTION OF SUB-GROUP			NUMBER OF CASES	PER CENT OF EACH CATEGORY					
				With Strong "Feeling . . ."			Wanting Much "More Time"		
				Wives	Husbands	Couples	Wives	Husbands	Couples
All Planning Groups	Total	All SES	1,309	38.2	32.8	18.4	53.1	33.6	21.4
		High SES	695	40.9	31.1	20.3	52.8	30.9	19.9
		Low SES	614	35.2	34.7	16.3	53.4	36.7	23.1
	1 Child	All SES	396	29.3	22.5	10.6	41.2	23.5	10.4
		High SES	251	33.1	22.3	12.3	41.8	21.5	10.4
		Low SES	145	22.8	22.8	7.6	40.0	26.9	10.3
	2 Children	All SES	541	42.1	33.3	21.2	53.5	33.6	22.6
		High SES	309	47.9	33.0	25.6	55.7	32.0	21.7
		Low SES	232	34.5	33.6	15.5	50.9	35.8	23.7
	3 or More Children	All SES	372	41.9	43.0	22.6	65.1	44.4	31.5
		High SES	135	39.3	43.0	23.0	66.7	45.9	33.3
		Low SES	237	43.5	43.0	22.4	64.1	43.5	30.4
Successful Planners	Total	All SES	478	32.6	27.0	14.0	47.5	27.0	16.5
		High SES	315	37.8	29.2	17.5	47.9	27.6	16.5
		Low SES	163	22.7	22.7	7.4	46.6	25.8	16.6
	1 Child	All SES	178	32.6	23.0	13.5	44.9	16.3	9.0
		High SES	121	34.7	23.1	15.7	43.0	15.7	9.1
		Low SES	57	28.1	22.8	8.8	49.1	17.5	8.8
	2 Children	All SES	235	31.1	27.2	14.0	46.8	30.2	19.1
		High SES	154	39.6	31.8	18.8	50.0	33.8	19.5
		Low SES	81	14.8	18.5	4.9	40.7	23.5	18.5
	3 or More Children	All SES	65	38.5	36.9	15.4	56.9	44.6	27.7
		High SES	40	40.0	37.5	17.5	55.0	40.0	27.5
		Low SES	25	36.0	36.0	12.0	60.0	52.0	28.0
Unsuccessful Planners	Total	All SES	831	41.4	36.1	20.9	56.3	37.4	24.2
		High SES	380	43.4	32.6	22.6	56.8	33.7	22.6
		Low SES	451	39.7	39.0	19.5	55.9	40.5	25.5
	1 Child	All SES	218	26.6	22.0	8.3	38.1	29.4	11.5
		High SES	130	31.5	21.5	9.2	40.8	26.9	11.5
		Low SES	88	19.3	22.7	6.8	34.1	33.0	11.4
	2 Children	All SES	306	50.7	37.9	26.8	58.8	36.3	25.2
		High SES	155	56.1	34.2	32.2	61.3	30.3	23.9
		Low SES	151	45.0	41.7	21.2	56.3	42.4	26.5
	3 or More Children	All SES	307	42.7	44.3	24.1	66.8	44.3	32.2
		High SES	95	38.9	45.3	25.2	71.5	48.4	35.8
		Low SES	212	44.3	43.9	23.6	64.6	42.5	30.7

¹ For dichotomy points on summary indices of attitudes, see Table 2.

DESCRIPTION OF SUB-GROUP			NUMBER OF CASES	PER CENT OF					
				Discouraged . . . Avoid Being Tied Down		Bothered By Being Tied Down		Interviewer Rating	
				Wives	Husbs.	Wives	Husbs.	Wives	Husbs.
All Planning Groups	Total	All SES	1,309	24.2	17.9	14.4	13.8	27.5	19.8
		High SES	695	28.5	18.0	17.3	12.7	29.3	20.0
		Low SES	614	19.4	17.7	11.2	15.1	25.5	19.6
	1 Child	All SES	396	17.4	13.7	11.1	8.1	21.7	18.1
		High SES	251	20.7	16.1	14.3	9.6	23.9	17.7
		Low SES	145	11.7	9.7	5.5	5.5	17.9	18.6
	2 Children	All SES	541	28.8	14.8	13.1	10.4	30.7	19.0
		High SES	309	35.6	16.8	14.2	8.1	35.0	20.4
		Low SES	232	19.8	15.5	11.6	13.4	24.9	17.0
	3 or More Children	All SES	372	24.8	24.7	19.9	25.0	29.2	23.0
		High SES	135	26.7	24.4	29.6	28.9	26.3	23.3
		Low SES	237	23.6	24.9	14.3	22.8	30.8	22.8
Successful Planners	Total	All SES	478	21.8	13.8	15.1	8.6	22.3	16.3
		High SES	315	26.7	15.6	19.1	8.8	24.8	17.9
		Low SES	163	12.3	10.4	7.4	8.0	17.5	13.1
	1 Child	All SES	178	16.9	12.4	14.0	5.6	21.9	18.3
		High SES	121	18.2	14.9	16.5	6.6	23.2	19.5
		Low SES	57	14.0	7.0	8.8	3.5	19.3	15.8
	2 Children	All SES	235	24.7	12.8	14.0	7.2	23.3	15.5
		High SES	154	32.5	14.3	18.8	6.5	28.6	18.2
		Low SES	81	9.9	9.9	4.9	8.6	12.8	10.3
	3 or More Children	All SES	65	24.6	21.5	21.5	21.5	20.0	13.8
		High SES	40	30.0	22.5	27.5	25.0	15.0	12.5
		Low SES	25	16.0	20.0	12.0	16.0	28.0	16.0
Unsuccessful Planners	Total	All SES	831	25.6	20.2	14.1	16.8	30.5	21.8
		High SES	380	30.0	20.1	15.8	15.8	33.1	21.7
		Low SES	451	22.0	20.4	12.6	17.7	28.4	22.0
	1 Child	All SES	218	17.9	14.8	8.7	10.1	21.6	17.9
		High SES	130	23.1	17.2	12.3	12.3	24.6	16.2
		Low SES	88	10.2	11.4	3.4	6.8	17.0	20.5
	2 Children	All SES	306	32.0	19.0	12.4	12.7	36.3	21.6
		High SES	155	38.7	19.4	9.7	9.7	41.3	22.6
		Low SES	151	25.2	18.5	15.2	15.9	31.1	20.5
	3 or More Children	All SES	307	24.8	25.4	19.5	25.7	31.1	24.9
		High SES	95	25.3	25.3	30.5	30.5	31.2	27.0
		Low SES	212	24.5	25.5	14.6	23.6	31.1	13.6

Table 20. Incidence of item responses showing a feeling of restriction among couples with children, by success in fertility planning, number of living children, and socio-economic status.¹

EACH CATEGORY GIVING RESPONSE SHOWING "FEELING . . ." ON ITEM

Some, Much or Very Much More Time Wanted For:									
Movies		Trips		Clubs, Etc.		Entertaining		Reading, Etc.	
Wives	Husbs.	Wives	Husbs.	Wives	Husbs.	Wives	Husbs.	Wives	Husbs.
27.8	12.5	44.6	34.2	22.2	14.2	47.9	33.0	56.4	32.6
26.8	11.2	41.6	33.8	24.8	13.4	47.6	31.7	57.1	29.8
29.0	14.0	48.0	34.7	19.2	15.1	48.2	34.4	55.4	35.8
17.9	8.3	35.4	25.3	13.8	11.4	35.6	26.8	42.4	26.8
17.5	8.4	33.7	23.9	15.5	11.2	35.8	24.3	41.8	27.9
18.6	8.3	40.0	27.6	10.3	11.7	35.2	31.0	43.4	24.8
29.2	8.7	43.8	33.8	26.7	12.4	48.4	31.1	60.0	31.1
28.8	8.7	43.0	35.6	31.3	12.6	50.8	31.8	65.0	27.2
29.7	8.6	44.8	31.5	20.7	12.1	45.3	30.2	53.5	36.2
36.3	22.6	55.6	44.4	24.7	19.9	60.2	42.4	65.6	41.1
39.3	22.2	54.8	48.1	27.4	19.3	62.3	45.2	87.4	39.3
34.6	22.8	56.1	42.2	23.2	20.3	59.1	40.7	64.6	42.2
22.6	7.7	40.0	28.7	21.4	12.3	43.9	28.0	53.8	24.9
22.6	8.8	38.1	29.5	24.0	11.8	45.1	28.9	53.7	25.4
22.7	5.5	43.6	27.0	16.6	13.5	41.7	26.4	54.0	23.9
21.9	3.4	38.2	17.4	15.2	6.2	39.3	21.3	42.1	20.8
19.8	5.0	33.9	18.2	14.9	3.3	34.7	19.8	38.8	23.1
26.3	0.0	47.4	15.8	15.8	12.3	49.1	24.6	49.1	15.8
22.1	6.8	37.9	31.5	27.4	13.6	45.1	28.9	59.6	23.8
24.0	7.8	40.3	32.5	32.2	16.9	50.0	32.5	63.0	25.3
18.5	4.9	33.3	29.6	18.5	7.4	35.8	22.2	53.1	21.0
26.2	23.1	52.2	49.2	16.9	24.6	52.2	43.1	64.6	40.0
25.0	25.0	42.5	52.5	20.0	17.5	57.5	42.5	62.5	32.5
28.0	20.0	68.0	44.0	12.0	36.0	44.0	44.0	68.0	52.0
30.8	15.3	47.3	37.4	22.6	15.3	50.2	35.8	57.8	37.1
30.3	13.2	44.5	37.4	25.5	14.7	49.7	34.0	60.0	33.4
31.2	17.1	49.6	37.4	20.2	15.7	50.5	37.3	55.9	40.1
14.7	12.4	33.0	31.7	12.4	15.6	32.6	31.2	42.7	31.6
15.4	11.5	31.5	29.2	16.2	18.5	36.9	28.5	44.6	32.3
13.6	13.6	35.2	35.2	6.8	11.4	26.1	35.2	39.8	30.7
34.6	10.1	48.4	35.6	26.1	11.4	51.0	32.8	60.5	36.6
33.5	9.7	46.8	38.7	30.3	8.4	51.6	31.2	57.1	29.0
35.8	10.6	51.0	32.4	21.9	14.6	50.4	34.4	53.6	44.4
38.4	22.5	56.4	43.3	26.4	18.9	61.9	42.1	65.8	41.4
45.3	21.1	60.0	46.3	30.5	20.0	64.2	46.3	69.5	42.1
35.4	23.1	54.7	42.0	24.5	18.4	60.9	40.3	64.2	41.0

¹ Responses taken as showing a feeling of restriction were "some," "much," and "very much . . . bothered," "more time," etc.

ANNOTATIONS

THE DETERMINANTS AND CONSEQUENCES OF POPULATION TRENDS

IN April of 1949 the Population Commission of the Economic and Social Council of the United Nations recommended that "... the Secretary-General should survey the existing scientific studies concerning the relationships between population trends and economic and social factors and prepare a summary of the findings of such studies with special reference to problems of economic development." The conception of the Population Commission was admirable; research that was relevant to the achievement of the purposes of the Economic and Social Council could best be planned against a background of knowledge of what we knew and did not know about the relations of population trends to economic development and social advance. The implementation of its directive appeared simple to the Commission; a survey of scientific studies and a summary of verified knowledge was merely bibliographic documentation for an appropriate delineation of the field to be covered. Five years later, in the spring of 1954, a rather massive report appeared bearing the title: *THE DETERMINANTS AND CONSEQUENCES OF POPULATION TRENDS*.¹

The summarization of world literature on the interrelations of economic and social factors with demographic variables proved a difficult and a complex task. Demography as science has advanced through meticulous study of limited variables in controlled situations, the development of more refined tools of

¹ United Nations, Department of Social Affairs, Population Division. *THE DETERMINANTS AND CONSEQUENCES OF POPULATION TRENDS. A SUMMARY OF THE FINDINGS OF STUDIES ON THE RELATIONSHIPS BETWEEN POPULATION CHANGES AND SOCIAL CONDITIONS*. ST/SOA/Ser.A/17. United Nations Publication Sales No.: 1953. XIII. 3. New York, 1953. xii, 404 pp.

measurement, and the elimination of or standardization for inconvenient if not contaminating social and economic factors. This splendid isolation has begun to break as research problems in population dynamics are defined in cross-disciplinary terms, but objective and empirical analysis of interrelations remains limited. The vacuum of science has been filled by a great literature of assumptions and generalizations, of conclusions derived from concealed premises taken as axiomatic. Theory has been unfashionable during decades when exciting developments in sampling and improved mathematical tools permitted high dividends from field surveys and developments in methodology. A resume of scientific studies oriented toward economic development faced still another difficulty. The greatest problems of human welfare are in one type of area, the most advanced demography in another. It is only against these limitations of research that the study of the Population Division can be evaluated. It is also these limitations to research and knowledge that justify a survey of what is known as a basis for planning the future work of the Population Division.

Part One, Introduction and Historical Background, presents an outline of world population growth. Here there is also a chapter on the history of population theories, including much on history but something less than a page on "Population 'types' and 'stages' of demographic evolution." It becomes obvious as one reads this section that there is a virtual absence of contemporary theoretical formulations that are consistent with known facts of population growth and interrelations.

Part Two, Factors Affecting Population Trends, devotes Chapters IV-VI to economic and social factors affecting mortality, fertility, and migration respectively. Data for analysis and analytical studies are most adequate for mortality. Here it was possible to present a survey of factors contributing to the high mortality of European peoples in former times, factors which contributed to the reductions of mortality, and the possible future. For today's so-called underdeveloped areas there is a great ignorance concerning differentials and interrelations. Studies of the presence or absence of social and economic relations in areas of sharply reduced mortality are notably lacking. Cautious conclusions of theoretical probabilities based on his-

torical trends and differentials in Western cultures are all that is possible.

Levels, differentials, and trends or their absence represent greater areas of ignorance in fertility than in mortality. Studies of fertility trends and differentials in countries of low fertility receive twenty pages; comparable studies in countries of high fertility receive less than five pages. Yet it is this latter subject, the fertility of the peoples of the underdeveloped areas, that is the hard core of the world's population problem, the potential negation of all that economic development and modern public health can achieve. Migration, especially internal movements to industrial employment and urban areas, may be related intimately to trends in fertility and hence to rates of growth. However, in Chapter VI, "Economic and Social Factors Affecting Migration," three-fourths of the space is devoted to international migration stated as being largely irrelevant to the future population of Asian countries; one-fourth of the space is devoted to internal migration, primarily in industrial countries of European culture.

Chapters on "Dynamics of Population Growth and Age Structure," "Future Population Trends," and "Factors Affecting Population Distribution" conclude *Part Two* on the factors affecting population trends. The interrelations of fertility, mortality, migration, and population growth combined with the complex dynamics of age structures preclude segregation of the influence of external factors on specific components of growth. A resume of trends in these demographic interrelations precedes a survey of future populations for the now traditional three "types" of areas—low fertility and mortality, incipient decline of fertility, and high fertility. Consideration of studies of factors affecting distribution rather dangles at the end of *Part Two*.

Part Three, Economic and Social Effects of Population Changes, is introduced by a chapter on "World Population and World Resources." Here problems of trade, migration, and international economic relations are considered as well as natural resources and capital. Ch. XI, "Population and Labour Supply," surveys the literature on factors affecting the size of the economically active population, the composition of that popu-

lation, and the relation between the active population and the labour supply. Knowledge pertains primarily to Western countries with advanced economies, and even here there are notable lacks in the analysis of relations with economic and social factors. For the under-developed countries the field is one of deep ignorance. Ch. XII, "Population and Consumption," and Ch. XIII, "Effects of Population Growth on *Per Capita* Income," reveal notable deficiencies even in those types of analytical studies permitted by available data. Chs. XIV and XV consider the implications of population trends in highly industrialized and in under-developed countries respectively. In the latter chapter there is one courageous page on "the need to check population growth." The final chapter, XVI, concerns "Effects of Major Migratory Movements in Modern Times." And there the study of the *Determinants and Consequences of Population Trends* ends without a conclusion. Moreover, it ends without what should have been Part Four on the interrelations of population growth and economic and social change.

The comments that have been made on the deficiencies and imbalances of coverage are not faults primarily of the people who surveyed and summarized scientific studies, although there is evidence of marked inequalities in types of literature available and in language facilities. The Population Division had a mandate to survey a defined research field with a view to distinguishing the well-tilled areas from the unknown jungles and the arid waste lands. They succeeded rather admirably in this task, so much so that those of us who are sociologists or economists as well as demographers see the filling of the gaps in research as a task that might occupy many social scientists in addition to demographers. It is obvious that sharply conceptualized and adequately executed demographic, economic, and social research is the primary need. It is obvious also that we do now know what we know on many subjects for many areas, that much integrative analysis of available data and materials might accompany or even precede the new studies that involve the collection of additional data. A related problem posed by the *Determinants and Consequences of Population Trends* is the inadequacy of research personnel and facilities for the task at hand, with the correlated dangers of a diffusion of effort

among many little projects rather than a careful selection of the most critical problems.

Many detailed comments could be made to prove that in a tiny segment of world knowledge the reviewer was more erudite than the authors. One who has struggled with world literature for two decades can only bow humbly to those who achieved monumental coverage with minimal errors and integrated the massive citations and notes into a significant report. No scholar concerned with the planning or guidance of research can long maintain self-respect without a well-thumbed copy.

IRENE B. TAEUBER

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